

02-18-00

02/17/00
jc645 U.S. PTO

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Box Patent Applications

Case Docket No. FUJA 17.073
Filed by Express Mail
(Receipt No. EL522353683US)
on February 17, 2000
pursuant to 37 CFR 1.10
by Lydia Gonzalez

A
jc584 U.S. PTO
09/506534
02/17/00

S I R:

Transmitted herewith for filing is: ☒ a new application
☐ a c-i-p application of S.N. _____ filed _____

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For: VIDEO TELECOMMUNICATION SYSTEM

Enclosed are:

- ☒ 30 sheets of drawings.(Figs. 1-31)
- ☒ Specification, including claims and abstract (28 pages)
- ☒ Declaration
- ☒ An assignment of the Invention to FUJITSU LIMITED
- ☐ A certified copy of _____ Application No. _____
- ☒ An associate power of attorney
- ☐ A verified statement to establish small entity status under 37 CFR 1.9 and 37 CFR 1.27
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- ☐ Other _____
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BASIC FEE		
TOTAL CLAIMS	22-20 =	2
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SMALL ENTITY	
RATE	FEE
	\$345
x 9 =	\$
x 39 =	\$
x 130 =	\$
TOTAL	\$

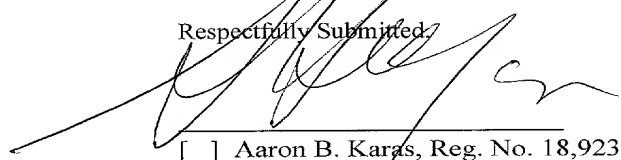
OTHER THAN A SMALL ENTITY	
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VIDEO TELECOMMUNICATION SYSTEM

BACKGROUND OF THE INVENTION

5 1. Field of the Invention

The present invention relates to a video
telecommunication system provided with a plurality of
cameras installed at a transmission side, at least one
monitor provided at a reception side, and a network for
10 transferring the video information data from the cameras
to the monitor and also relates to a video transmission
apparatus and a video reception apparatus used for such a
video telecommunication system.

Wide use is now becoming made of the above
15 video telecommunication systems for example for remote
monitoring of traffic conditions at multiple locations of
highways and remote monitoring of the environment at
multiple locations near dams and their reservoirs. The
advances made in large-capacity data transmission
20 technology using dedicated optical fibers has contributed
much to this.

2. Description of the Related Art

In such a video telecommunication system, when
viewing a video from a transmission side camera (video
25 camera) displayed at the output part of a video receiver
apparatus provided in for example a supervisory center,
that is, the above monitor, the most important
information together with the video information is the
information on the name of the location, that is, the
30 place the camera is now shooting. In the case of the
example of monitoring the area around a dam and its
reservoir, specific examples of the information on the
place names are a "Bridge A", "Road B", "River C",
"Valley D", "Mountain E", etc.

35 The information on such place names
conventionally is recorded by an operator going out to
the video transmission apparatus (field) working with the

cameras.

When it was necessary to change a once recorded place name or when it is learned that there was an error in a once recorded place name and it has to be corrected, in the past an operator went out to the video transmission apparatus to make the change or correction.

Further, in the related art, the working conditions of the cameras placed in the field were monitored using a dedicated monitoring terminal provided in the supervisory center.

Summarizing the problems to be solved by the invention, in the above video telecommunication system of the related art, a large number of steps were involved in recording the above place name information. Therefore, there was the problem that the larger the number of places covered or the further away the places, the huger the number of steps required for recording the place names.

Further, there was the problem that when a need arose for changing or correcting a place name, the operation for that purpose ended up requiring a long time. Therefore, the interruption until the video from the cameras could be monitored normally once again ended up becoming longer.

Still further, if viewing the monitoring of the working conditions of the cameras, since the dedicated monitoring terminal and monitor were provided separately, there was a lack of full coordination between the two and consequently there was the problem that the inspection at the camera installation side (transmission side) could not be performed efficiently.

SUMMARY OF THE INVENTION

An object of the present invention is to provide a video telecommunication system which enables a place name to be recorded or changed or corrected easily and in a short time and which enables inspection of the camera side (transmission side) to be performed efficiently from

the center side (receiving side) and to a video transmission apparatus and a video reception apparatus used for such a video telecommunication system.

To attain the above object, the present invention provides a video telecommunication system having a video information describing means for sending a camera switch command to a video transmission apparatus, simultaneously sending character information describing the video information of a camera in accordance with the switch command, and having the video information and the character information displayed on a monitor. By this, it is possible to provide a video telecommunication system having a plurality of cameras (video cameras) installed at remote locations and a monitor for monitoring the video, which system can easily record, change, and correct character information on the place name etc. to be combined with the video information.

BRIEF DESCRIPTION OF THE DRAWINGS

The above object and features of the present invention will be more apparent from the following description of the preferred embodiments given with reference to the accompanying drawings, wherein:

Fig. 1 is a view of the basic configuration of a video telecommunication system according to the present invention;

Fig. 2 is a view of a first embodiment according to the present invention;

Fig. 3 is a view of a specific example of a video reception apparatus in Fig. 2;

Fig. 4 is a view of the configuration shown in Fig. 2 and Fig. 3 shown by another form of expression;

Fig. 5 is a view of a second embodiment according to the present invention;

Fig. 6 is a view of a specific example of a video transmission apparatus in Fig. 5;

Fig. 7 is a view of a specific example of a video reception apparatus in Fig. 5;

Fig. 8 is a view of the configuration shown in Fig. 5 to Fig. 7 shown by another form of expression;

Fig. 9 is a view of a first example of a data format of a signal sent to a network;

5 Fig. 10 is a view of a second example of a data format of a signal sent to a network;

Fig. 11 is a view of the configuration of a video reception apparatus in the case of use of a data frame of Fig. 9;

10 Fig. 12 is a view of a specific example of a video transmission apparatus in a third embodiment;

Fig. 13 is a view of a specific example of a video reception apparatus in the third embodiment;

15 Fig. 14 is a view of a fourth embodiment according to the present invention;

Fig. 15 is a view of the configuration of Fig. 14 shown by a different form of expression;

Fig. 16 is a view of a specific example of a video transmission apparatus in the fourth embodiment;

20 Fig. 17 is a view of a specific example of a video reception apparatus in the fourth embodiment;

Fig. 18 is a view of a specific example of a video reception apparatus in a fifth embodiment;

25 Fig. 19 is a view of the fifth embodiment shown by a different form of expression;

Fig. 20 is a view of a specific example of a video transmission apparatus in a sixth embodiment;

Fig. 21 is a view of a specific example of a video transmission apparatus in a seventh embodiment;

30 Fig. 22 is a view of a specific example of a video reception apparatus in the seventh embodiment;

Fig. 23 is a view of the seventh embodiment shown by a different form of expression;

35 Fig. 24 is a view of a specific example of a video transmission apparatus in an eighth embodiment;

Fig. 25 is a view of the eighth embodiment shown by a different form of expression;

Fig. 26 is a block diagram of a circuit of a detailed example of the video transmission apparatus shown in Fig. 6;

5 Fig. 27 is a block diagram of a circuit of a detailed example of the video reception apparatus shown in Fig. 7;

Fig. 28 is a block diagram of a circuit of a detailed example of the video transmission apparatus shown in Fig. 12;

10 Fig. 29 is a block diagram of a circuit of a detailed example of the video reception apparatus shown in Fig. 13;

15 Fig. 30 is a block diagram of a circuit of a detailed example of the video transmission apparatus shown in Fig. 16; and

Fig. 31 is a block diagram of a circuit of a detailed example of the video reception apparatus shown in Fig. 17.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

20 Preferred embodiments of the present invention will be described in detail below while referring to the attached figures.

25 Figure 1 is a view of the basic configuration of a video telecommunication system according to the present invention.

30 In the figure, reference numeral 10 shows a video telecommunication system. The video telecommunication system 10 has video transmission apparatuses 12 provided with cameras 11, a video reception apparatus 14 provided with a monitor 15 for receiving and displaying the video information sent from the cameras 11, and a network 13 over which the video transmission apparatuses 12 and the video reception apparatus 14 are connected.

35 The present invention is characterized in the provision of a video information describing means 16 in the system 10. This video information describing means 16 sends a switch command for a camera 11 to a video

transmission apparatus 12, simultaneously sends character information for describing the video information of the camera 11 in accordance with the switch command, and makes the monitor 15 display the video information and the character information.

Here, the "switch command for a camera 11" means, first, to switch from one camera to another camera and, second, to change the angle of a camera to switch the place shot.

Further, the "character information for describing the video information" means, in addition to the already exemplified "Bridge A", "Road B", "River C", etc., character information such as the number (No.) of the camera shooting a scene being monitored or an angle of a camera (0 degree, 90 degrees, etc.)

By providing a video information describing means 16 in this way, it is possible to record, change, and correct character information from a single location (if necessary, several locations) commonly for all cameras.

Figure 2 is a view of a first embodiment according to the present invention. Note that throughout the figures, the same components are shown with the same reference numerals or symbols.

In Fig. 2, the above-mentioned video information describing means 16 is shown as a control console 21. The control console (video information describing means) 21 sends the above-mentioned switch command through the network 13 to the video transmission apparatuses 12, while sends the character information through control lines 22 to the video reception apparatuses 14. Therefore, the switched video information and character information are displayed on the monitors 15. Note that an example of a configuration provided with a plurality of pairs of video reception apparatuses 14 and monitors 15 is shown at the receiving side, but a single pair is also possible as shown in Fig. 1.

Figure 3 is a view of a specific example of a video

reception apparatus in Fig. 2. The apparatus 14 in the figure is a video reception apparatus used in a video telecommunication system 10 having cameras 11, a monitor 15 for receiving and displaying the video information sent from the cameras 11, and a network linking the cameras 11 and the monitor 15 as shown in Fig. 1 and the apparatus 14 includes a decoding unit 25, character information converting unit 26, and display combining unit 27.

10 The decoding unit 25 converts the video information sent from a camera 11 to analog video information.

15 The control console (video information describing means) 16 sends a switch command for a camera 11, simultaneously sends character information for describing the video information from the camera 11 in accordance with that switch command, and the character information converting unit 26 receives the character information from the console 16 able to display the video information and character information on a monitor, and converts the digital code forming the character information to character information.

20 The display combining unit 27 combines the character information from the character information converting unit 26 and the video information from the decoding unit 25 and outputs the result to a monitor 15.

25 Figure 4 is a view of the configuration shown in Fig. 2 and Fig. 3 using a different form of expression. First, the control console 21 shown in Fig. 2 will be shown concretely. The main part inside it is a title management table. The table is broken down by the camera numbers (Nos.) and the camera angles. The names (titles) of the bridges, rivers, mountains, etc. are entered into it in advance. The character information is recorded, changed, and corrected here.

30 When the operator of the control console 21 inputs a switch command, the switch command is sent through a control package (PKG) 34 and the network 13 (including a

video path 13I and a switch control path 13S) to the cameras 11. Receiving the switch command, the cameras 11 start shooting and start sending the video information to video receiver units 31 of the video reception apparatuses 14. A receiver unit 31 includes the decoding unit 25 of Fig. 3.

At the same time, the switched title and other character information are input through a control line 22 to a character information processing PC (personal computer) 33. The PC 33 functions as the character information converting unit 26 of Fig. 3.

The thus received video information and character information are input to a superimpose generator (GEN) 32 to form the integral combined data which is further output and displayed on the monitor 15. Here the superimpose generator (GEN) 32 forms the display combining unit 27 of Fig. 3. Note that the superimpose generator (GEN) 32 will be explained later.

Figure 5 is a view of a second embodiment according to the present invention. The difference from the above first embodiment is that the control console (video information describing means) 21 in the second embodiment sends the switch command and the character information together through the network 13 to the video transmission apparatus 12. The apparatus 12 extracts the character information therefrom and multiplexes the extracted character information and the video information and sends the result to the video reception apparatus 14.

In the same way as the case of the first embodiment, a plurality of logical channels are formed on the network 13. Each of the video reception apparatuses 14 uses one logical channel (time slot) assigned to it. On the other hand, the video transmission apparatuses 12 make common use of the plurality of logical channels and can freely distribute the video information to the desired logical channels. Which logical channel to use, however, is instructed by the control console 21.

Figure 6 is a view of a specific example of the video transmission apparatus 12 in Fig. 5. The apparatus 12 in the figure is a video transmission apparatus used in a video telecommunication system 10 having a camera 11, a monitor 15 receiving and displaying the video information sent from the camera 11, and a network 13 linking the camera 11 and the monitor 15. The apparatus 12 has as its characterizing feature the character information combining unit 42. This combining unit 42 sends character information as well as a switch command for the camera 11, receives the switch command and character information from the control console (video information describing means) 21 able to display the video information and character information on the monitor 15, combines the character information extracted from the received information with the video information from the camera 11, and outputs the result to the monitor 15.

The coding unit 41 converts the analog video information from the camera 11 to digital video information. Further, the network multiplexing unit 43 inserts the signal from the combining unit 42 combining the digital video information and the digital character information sent from the control console 21 into a predetermined logical channel on the network 13.

Figure 7 is a view of a specific example of a video reception apparatus in Fig. 5. The main part of the apparatus 14 in the figure is the character information separating unit 46. Note that the decoding unit 25 and the display combining unit 27 are as already discussed.

The character information from the control console (video information describing means) 21 which sends the character information together with the switch command for the camera 11 and can display the video information and character information on the monitor 15 is received once at the camera 11 side. The character information separating unit 46 receives the video information and the

character information together as one unit from the camera 11 side, then separates the character information from the received information.

5 The decoding unit 25 converts the received video information to analog video information. The display combining unit 27 combines the character information from the character information separating unit 46 with the video information from the decoding unit 25 and outputs the result to the monitor 15 side.

10 Note that the network demultiplexing unit 45 demultiplexes and takes out the data in the logical channel assigned to that video reception apparatus 14 from the plurality of logical channels on the network 13.

15 Figure 8 is a view of the configuration shown in Fig. 5 to Fig. 7 given by a different form of expression and corresponds to Fig. 4 in the case of the first embodiment.

20 The control lines 22 in the case of the first embodiment (Fig. 4) are not used. All of the information is sent and received over the network 13. Further, the video receiver unit 31 of the figure outputs both the video information and the character information and inputs them to the superimpose generator (GEN) 32. The video information signal is transferred via a general television use NTSC terminal, while the character
25 information signal is transferred via a general RS232-C terminal.

Figure 9 is a view of a first example of the data format of a signal sent over the network 13.

30 Figure 10 is a view of a second example of the data format of a signal sent over the network 13.

The above-mentioned character information combining unit 42 (Fig. 6) inserts the combined video information and character information, as shown in Fig. 9 and Fig.
35 10, in a data frame DF and outputs the same to the monitor 15 side.

In the case of Fig. 9, the data frame DF is a data

frame formed based on the MPEG and holds the video information and the character information in a user data region.

Further, in the case of Fig. 10, the data frame DF is a data frame formed based on the MPEG and holds the character information in a private data region.

The user data region and the private data region are both data regions opened to the user. Since the video information and the character information are sent simultaneously in this way, the display of the video information and the display of the character information on the monitor 15 are simultaneous. There is never any deviation in timing between the two displays. Therefore, the operator viewing the monitor 15 never feels there is anything strange.

The user data is present in the MPEG-TS (Fig. 10). In more detail, it is present in the coded video data. Therefore, the character information is set in the user data. In this case, there is no need to alter the timing of setting the character information in the MPEG2 data or the portion (processing part) of setting.

The video receiver unit converts the character information taken out from the user data to CCD (closed caption data) information of the NTSC signal to give the configuration such as in Fig. 11 at the video receiving side. In this case, the display combining unit 27 in Fig. 13, which is explained later, is present in the video receiver unit 31 in Fig. 11. The character information is set in the CCD information of the NTSC signal output from the video receiver unit 31. By connecting the receiver unit 31 to a monitor with a built-in closed caption function, the character information is displayed automatically overlaid. Note that the conversion from user data to CCD information is by a mechanism enabling complete synchronization by the U.S. ATV system. As a monitor with a built-in closed caption function, for example there are the Sony monitors PVM2054T and PVM1454T

and the Hitachi video VT-F51PC (98.000).

Figure 11 is a view of the configuration of a video reception apparatus in the case of use of the data frame of Fig. 9. There is no superimpose generator GEN. The video receiver unit 31 is directly coupled with the monitor 15.

Next, an explanation will be given of a third embodiment according to the present invention. The overall view of the system is the same as that of the configuration shown in Fig. 5 (second embodiment).

The third embodiment is preferably used for the case of use of the data frame DF of the format shown in the above Fig. 10.

In the data frame DF of the format shown in Fig. 9 (using user data), the character information is completely overlaid on the video information, but in the data frame DF of the format shown in Fig. 10 (using private data), the unity of the video information and the character information is not guaranteed. The third embodiment is effect for the case where unity is desired to be guaranteed.

Figure 12 is a view of a specific example of the video transmission apparatus in the third embodiment. In the figure, a character information setting unit 51 and a character/video multiplexing unit 52 are newly introduced components. The character/video multiplexing unit 52, together with the character information setting unit 51, forms the data frame DF of the format shown in Fig. 10 and sends it via the network multiplexing unit 43 to the network 13. Here, the character information setting unit 51 inputs just the character information to the multiplexing unit 52 in synchronization so that the switched video information and character information come together.

Figure 13 is a view of a specific example of the video reception apparatus in the third embodiment. In the figure, a character/video separating unit 53 is a newly

introduced component.

The character/video separating unit 53 separates the character information from the private data portion. The separated character information is input to the display combining unit 27 together with the video information converted to an analog signal at the decoding unit 25.

Figure 14 is a view of a fourth embodiment according to the present invention. The fourth embodiment has as its characterizing feature the connection of a video transmission apparatus 12 and the corresponding video reception apparatus 14 not only by the video path 13I on the network 13, but also the switch control path 13S. That is, by using the switch control path 13S, the video information and the character information are transmitted separately and independently from each other without being combined or multiplexed.

Figure 15 is a view of the configuration of Fig. 14 shown by another form of expression. The video receiver unit 31 can also be connected to the switch control path 13S.

Figure 16 is a view of a specific example of the video transmission apparatus in the fourth embodiment.

In the video transmission apparatus 12 of this figure, the character information transmitter unit 55 is newly introduced. This receives the character information directly from the switch control path 13S on the network 13, inputs the information to the network multiplexing unit 43 in synchronization so that the switched video information and character information come together, and sends the information through the path 13S to the monitor 15 side.

Figure 17 is a view of a specific example of the video reception apparatus in the fourth embodiment.

In the video reception apparatus 14 of this figure, the character information receiver unit 56 is newly introduced. This receives the character information directly from the switch control path 13S on the network

13 and displays it on the monitor 15.

The decoding unit 25 converts the video information received through the video path 13I to analog video information. The display combining unit 27 combines the character information from the character information receiver unit 56 and the video information from the decoding unit 25 and outputs the result to the monitor 15 side.

Next, an explanation will be given of a fifth embodiment of the present invention.

Figure 18 is a view of a video reception apparatus in the fifth embodiment. The video reception apparatus 14 in the fifth embodiment has as its characterizing feature the introduction of the character information alteration unit 61. In this case, the alteration unit 61 refers to a character information alteration table 62.

There are two advantages to the fifth embodiment.

First, there is a limit to the transmission capacity over the network 13 and it is sometimes not possible to transmit large volume character information as it is. In such a case, the character information to be sent from the control console 21 is sent as a code in order to reduce the amount of the data.

Receiving the character information as a code, the video reception apparatus 14 changes it to the original character information corresponding to the received code at the character information alteration unit 61 with reference to the table 62 and inputs the result to the display combining unit 27.

Second, it is possible to simply change to character information defined uniquely at the monitor side. The character information provided from the control console 21 is defined by a local name at the site where the camera is installed. However, at the monitor 15 side (center side), there is a request to display a generally accepted name. In this case, the fifth embodiment is convenient.

Figure 19 is a view of the fifth embodiment shown by a different form of expression. This corresponds to the configuration shown in Fig. 4 plus a character information alteration processing personal computer (PC) 63.

Inside the PC 63 is mounted a memory unit forming a character information alteration table 62.

Next, an explanation will be given of a sixth embodiment based on the present invention.

Figure 20 is a view of a video transmission apparatus in the sixth embodiment. The sixth embodiment provides the character information alteration unit (61) explained in the fifth embodiment and the character information alteration table (62) cooperating with the unit (61) both installed at the camera 11 side. These are shown by reference numerals 61 and 62 in Fig. 20.

The character information altered at the camera 11 side is multiplexed with the video information (digital) from the coding unit 41 in the (digital) multiplexing unit 67 and the result sent to the network 13 side.

Next, an explanation will be given of a seventh embodiment according to the present invention.

Figure 21 is a view of a video transmission apparatus in the seventh embodiment.

Figure 22 is a view of a video reception apparatus in the seventh embodiment.

The seventh embodiment has as its characterizing feature the provision of the display combining unit (in Fig. 21, shown by 71) at the camera 11 side. Therefore, as shown in the video reception apparatus 14 of Fig. 22, the display combining unit is eliminated from the apparatus 14. The display combining unit 71 of Fig. 21 combines the video information from the camera 11 and the character information by a signal format able to be displayed as it is.

Normally, there are fewer monitors 15 than cameras 11. If a display combining unit breaks down at the

monitor 15 side, the video from a large number of cameras can no longer be received. Considering this potential problem, display combining units 71 may also be provided dispersed at the camera 11 side.

5 Figure 23 is a view of the seventh embodiment shown by a different form of expression. The display combining unit 71 of Fig. 21 is comprised by a superimpose generator (GEN).

10 Finally, an explanation will be given of an eighth embodiment according to the present invention.

15 Figure 24 is a view of a video transmission apparatus in the eighth embodiment. The video transmission apparatus 12 according to the eighth embodiment has as its characterizing feature the provision of a condition information notifying unit 75.

20 The condition information notifying unit 75 notifies the monitor 15 side of condition information showing the working condition of the camera 11. In this notification, it uses the previously explained character information combining unit 42. There, it can combine this with the character information for transmission.

25 At the monitor 15 side, it is possible to monitor abnormalities in the working condition of the cameras in addition to character information showing the titles. An abnormality means for example an abnormality in rotation of a camera, a focusing abnormality, or other trouble.

30 Figure 25 is a view of the eighth embodiment shown by a different form of expression. In the figure, the condition information notifying unit 75 of Fig. 24 is shown as the condition information notification processing personal computer (PC) 76.

35 In the above embodiments, the display combining unit 27 (71) constitutes one of the major components. As a specific example, a superimpose generator (GEN) 32 (27) is used. This superimpose generator (GEN) 32 (27) performs the function of superimposing the character information on the video information on the monitor. As a

specific product, there is for example the "Kanji Terop Generator" (KTG-1600) made by Hoei Co., Ltd. This receives as input the video signal and character signal and combines the two for output to the monitor.

5 Detailed examples of the circuit configuration used in the embodiments explained above will be explained below.

Figure 26 is a block diagram of a circuit showing a detailed example of the video transmission apparatus shown in Fig. 6. In the figure, portions corresponding to the components of Fig. 6 are shown by the same reference numerals.

The control unit 81 controls the entire video transmission apparatus 12 and is connected through the control buses CB of the two-directional arrow marks to a selector (SEL), A/D converter, coding unit 41, etc.

When there are a plurality of cameras 11, for example, three, the video information (analog) from the cameras 11 are input as Video 1 to Video 3. The desired single video information is selected by the selector (SEL) and converted to digital video information by the A/D converter.

The video information is further, as explained already, processed by the coding unit 41 and the character information combining unit 42 comprised of a multiplexer, stored once in a buffer memory, then sent through the network multiplexing unit 43 to the network 13. Note that the network multiplexing unit 43 includes a demultiplexing unit for processing the signal from the network 13.

The PLL in the figure receives a timing signal of the camera side and a signal from a timing generating unit, synchronizes the two, and distributes the required clock to the memory etc.

35 Figure 27 is a block diagram of a circuit showing a detailed example of the video reception apparatus shown in Fig. 7. The components 45, 46, 25, and 27 shown in

Fig. 7 are shown in this figure.

The network demultiplexing unit 45 is comprised of a line interface, synchronization detecting unit, and data separating unit.

5 The character information separated at the character information separating unit 46 is sent out to the display combining unit 27 as it is, while the video information is reproduced as an analog signal at the decoding unit 25, held once at the memory, converted to a digital
10 format at the A/D converter, and input to the display combining unit 27.

When the synchronization detecting unit detects a synchronization abnormality, the control unit 81 instructs the decoding unit 25 and memory to freeze. At
15 this time, the selector SEL switches from the network clock, that is, the output of the PLL, to an internal clock, that is, the output of the clock reproducing unit.

Figure 28 is a block diagram of a circuit showing a detailed example of the video transmission apparatus shown in Fig. 12. The configuration in this figure is
20 substantially the same as the configuration of the above-mentioned Fig. 26. Instead of the character information combining unit 42 of Fig. 26, a character/video multiplexing unit 52 is provided in Fig. 28. The
25 character information received at the control unit 81 from the network 13 is multiplexed at the multiplexing unit 52 with the video information coded at the coding unit 41. At this time, the control unit 81 transfers the above character information to the multiplexing unit 52
30 in synchronization with the coding of the switched video at the coding unit 41.

Figure 29 is a block diagram of a circuit showing a detailed example of a video reception apparatus shown in Fig. 13. The components 45, 53, 25, and 27 shown in Fig.
35 13 are shown in this figure. Among these, the character/video separating unit 53 separates the character information and the video information. The

other components are substantially the same as the configuration shown in Fig. 27.

Figure 30 is a block diagram of a circuit showing a detailed example of a video transmission apparatus shown in Fig. 16. The configuration of this figure is substantially the same as the configuration of Fig. 26 minus the character information combining unit 42 and plus the character information transmitter unit 55. The transmitter unit 55 is shown in Fig. 30 as a simple loopback path to the multiplexing unit. At this time, the control unit 81 adds an identifier to the character information so that the fact of transmission of the character information can be understood at the monitor side.

Further, the switched video is looped back to the multiplexing unit in synchronization with the coding at the coding unit 41.

Figure 31 is a block diagram of a circuit showing a detailed example of the video reception apparatus shown in Fig. 17. The configuration of this figure is substantially the same as the configuration of Fig. 27 minus the character information separating unit 46 and plus the character information receiver unit 56. The receiver unit 56 is shown in Fig. 31 as a simple data transfer path to the display combining unit 27.

Only the information sent from the camera 11 side (transmitting side) in the character information received from the line interface is output to a serial port P. Next, the video converted from an analog to digital format at the A/D converting unit and its character information are combined at the display combining unit. Therefore, the character information is switched at the same time as switching of the camera.

Summarizing the effects of the present invention, as explained in detail above, according to the present invention, it is possible to record or change or correct the name of the place being shot etc. without having to

go to the site where the camera is installed.

Further, when a camera is switched, the name of the place being shot after the switch etc. can be displayed on the monitor substantially simultaneously with the
5 change of the video resulting from the switch and no strange feeling is given to the operator viewing the monitor.

Further, it is possible to display on the monitor even information on abnormalities occurring at the camera
10 side in real time.

While the invention has been described with reference to specific embodiment chosen for purpose of illustration, it should be apparent that numerous
15 modifications could be made thereto by those skilled in the art without departing from the basic concept and scope of the invention.

What is claimed is:

1. A video telecommunication system comprising:
a video transmission apparatus provided
with a camera,
5 a video reception apparatus provided with
a monitor for receiving and displaying video information
sent from the camera,
a network over which the video
transmission apparatus and the video reception apparatus
10 are connected, and
a video information describing unit for
sending a switch command for the camera to the video
transmission apparatus, simultaneously sending character
information describing the video information of the
15 camera in accordance with the switch command, and making
the monitor display the video information and the
character information.
2. A video telecommunication system as set forth
in claim 1, wherein said video information describing
20 unit sends said switch command via the network to the
video transmission apparatus and sends the character
information via a control line to the video reception
apparatus.
3. A video telecommunication system as set forth
25 in claim 1, wherein the video information describing unit
sends both the switch command and the character
information via the network to the video transmission
apparatus which extracts the character information
therefrom and multiplexes the extracted character
30 information and the video information sends the same to
the video reception apparatus.
4. A video transmission apparatus used in a video
telecommunication system comprising a camera, a monitor
for receiving and displaying video information sent from
35 the camera, and a network connecting the camera and
monitor, comprising:
a character information combining unit for

receiving both a switch command and character information from a video information describing unit which sends the switch command for the camera, simultaneously sends character information describing the video information of the camera in accordance with the switch command, and makes the monitor display the video information and the character information, and for combining the character information extracted from there with the video information of the camera and outputting the result to the monitor side.

5. A video transmission apparatus as set forth in claim 4, wherein said character information combining unit inserts the combined video information and character information together in a data frame and outputs the result to the monitor side.

6. A video transmission apparatus as set forth in claim 5, wherein the data frame is a data frame formed based on the MPEG and holds the video information and character information in a user data region of the data frame.

7. A video transmission apparatus as set forth in claim 5, wherein the data frame is a data frame formed based on the MPEG and holds the character information in a private data region in the data frame.

8. A video transmission apparatus used in a video telecommunication system comprising a camera, a monitor for receiving and displaying video information sent from the camera, and a network connecting the camera and monitor, comprising:

a video/character information multiplexing unit for receiving a switch command and its character information from a video information describing unit which sends the switch command for the camera, simultaneously sends character information describing the video information of the camera in accordance with the switch command, and makes the monitor display the video information and the character information, and for

multiplexing the character information extracted from there with the video information of the camera and outputting the result to the monitor side and

5 a character information setting unit for inputting the character information to the character/video multiplexing unit in synchronization so that the switched video information and character information come together.

10 9. A video transmission apparatus used in a video telecommunication system comprising a camera, a monitor for receiving and displaying video information sent from the camera, and a network connecting the camera and monitor, comprising:

15 a character information transmitter unit for receiving through a video path and switch control path on the network a switch command and character information from a video information describing unit which sends the switch command for the camera, simultaneously sends character information describing the
20 video information of the camera in accordance with the switch command, and makes the monitor display the video information and the character information, and for outputting the character information extracted from the switch control path, separate from the video information
25 of the camera, through the switch control path, to the monitor side.

30 10. A video transmission apparatus as set forth in claim 4, further comprising a character information alteration unit for altering the character information received from the video information describing unit to character information unique to the camera side.

35 11. A video transmission apparatus used in a video telecommunication system comprising a camera, a monitor for receiving and displaying video information sent from the camera, and a network connecting the camera and monitor, comprising:

a display combining unit for receiving a

switch command and character information from a video
information describing unit which sends the switch
command for the camera, simultaneously sends character
information describing the video information of the
5 camera in accordance with the switch command, and makes
the monitor display the video information and the
character information, and for combining the character
information extracted from there with the video
information of the camera by a signal format able to be
10 displayed as it is on the monitor.

12. A video transmission apparatus as set forth in
claim 11, wherein the display combining unit is comprised
of a superimpose generator.

13. A video transmission apparatus as set forth in
15 claim 4, further comprising a condition notifying unit
for notifying the monitor side of condition information
expressing the working condition of the camera.

14. A video transmission apparatus as set forth in
claim 13, wherein the information from the condition
20 notifying unit is input to the character information
combining unit.

15. A video reception apparatus used in a video
telecommunication system comprising a camera, a monitor
for receiving and displaying video information sent from
25 the camera, and a network connecting the camera and
monitor, comprising:

a decoding unit for converting video
information sent from the camera to analog video
information,

30 a character information converting unit
for receiving a switch command from a video information
describing unit which sends the switch command for the
camera, simultaneously sends character information
describing the video information of the camera in
35 accordance with the switch command, and makes the monitor
display the video information and the character
information, and for converting a digital code forming

the character information to analog character information, and

a display combining unit for combining the character information from the character information converting unit with the video information from the decoding unit and outputting the result to the monitor.

16. A video reception apparatus as set forth in claim 15, wherein the display combining unit is comprised of a superimpose generator.

17. A video reception apparatus used in a video telecommunication system comprising a camera, a monitor for receiving and displaying video information sent from the camera, and a network connecting the camera and monitor, comprising:

a character information separating unit for receiving once at the camera side character information from a video information describing unit which sends a switch command for the camera, simultaneously sends character information describing the video information of the camera in accordance with the switch command, and makes the monitor display the video information and the character information, and for receiving the character information together with the video information of the camera side, then separating it and

a decoding unit for converting the received video information to analog video information and

combining the character information from the character information separating unit with the video information from the decoding unit and outputting the result to the monitor.

18. A video reception apparatus used in a video telecommunication system comprising a camera, a monitor for receiving and displaying video information sent from the camera, and a network connecting the camera and monitor, comprising:

5 a character/video separating unit for
receiving once at the camera side character information
from a video information describing unit which sends a
switch command for the camera, simultaneously sends
character information describing the video information of
the camera in accordance with the switch command, and
makes the monitor display the video information and the
character information, and for receiving the video
information and character information from the camera
10 side, then separating the character information,

a decoding unit for converting video
information from the character/video separating unit to
analog video information, and

15 a display combining unit for combining the
character information from the character/video separating
unit with the video information from the decoding unit
and outputting the result to the monitor.

19. A video reception apparatus as set forth in
claim 18, wherein the display combining unit is comprised
20 of a superimpose generator.

20. A video reception apparatus used in a video
telecommunication system comprising a camera, a monitor
for receiving and displaying video information sent from
the camera, and a network connecting the camera and
25 monitor, comprising:

a character information receiver unit for
receiving, through a switch control path on the network,
character information from a video information describing
unit which sends a switch command for the camera,
30 simultaneously sends character information describing the
video information of the camera in accordance with the
switch command, and makes the monitor display the video
information and the character information,

35 a decoding unit for converting the video
information received through the video path on the
network to analog video information, and

a display combining unit for combining the

character information from the character information receiver unit with the video information from the decoding unit and outputting the result to the monitor.

21. A video reception apparatus as set forth in
5 claim 17, further comprising a character information
alteration unit for altering the received character
information to character information unique to the
monitor side.

22. A video reception apparatus as set forth in
10 claim 18, further comprising a character information
alteration unit for altering the received character
information to character information unique to the
monitor side.

VIDEO TELECOMMUNICATION SYSTEM

5

ABSTRACT OF THE DISCLOSURE

10 A video telecommunication system having a plurality
of cameras (video cameras) installed at remote locations
and a monitor for monitoring the video, provided with a
video information describing unit for sending a switch
command for the camera to a video transmission apparatus,
simultaneously sending character information describing
the video information of the camera in accordance with
15 the switch command, and having the video information and
the character information displayed on the monitor,
whereby it is possible to easily record, change, and
correct character information on the place name etc.
combined with the video information.

Fig.1

10

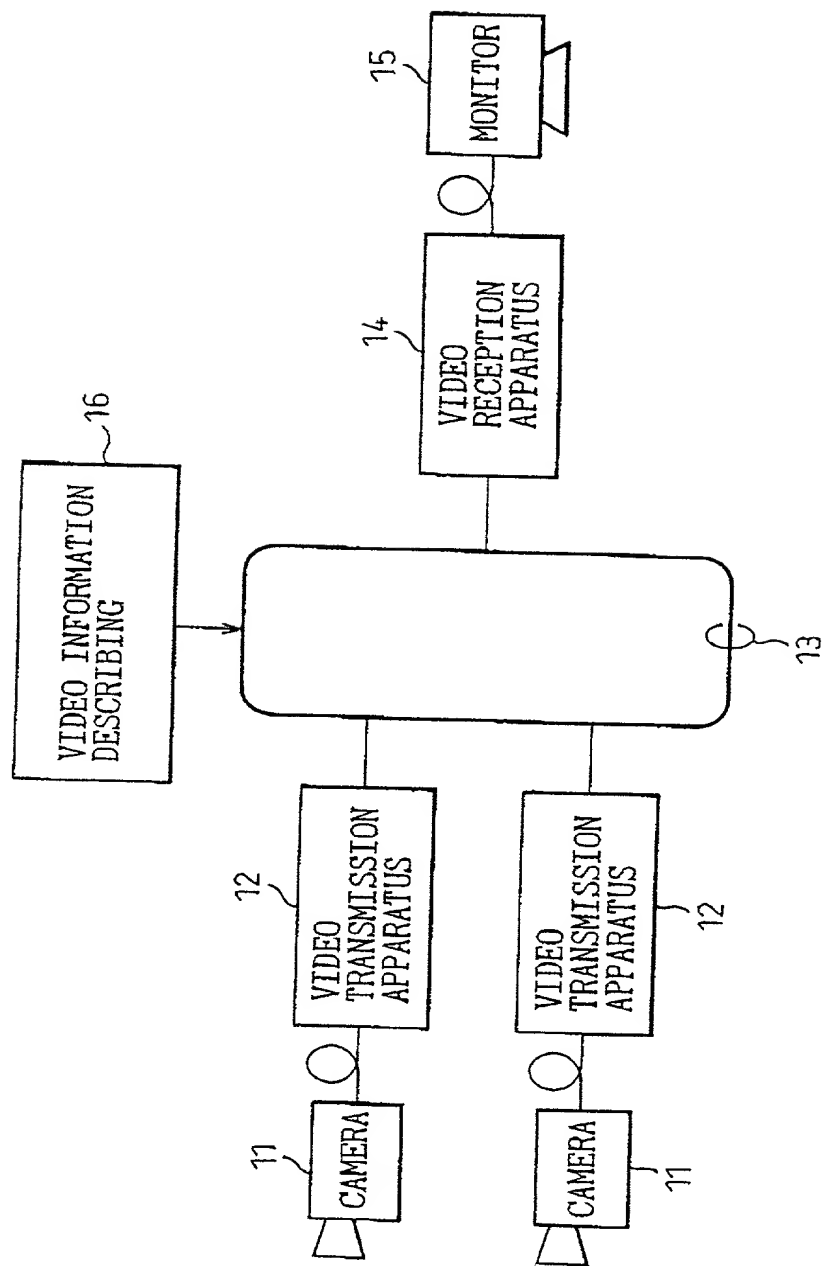


Fig.2

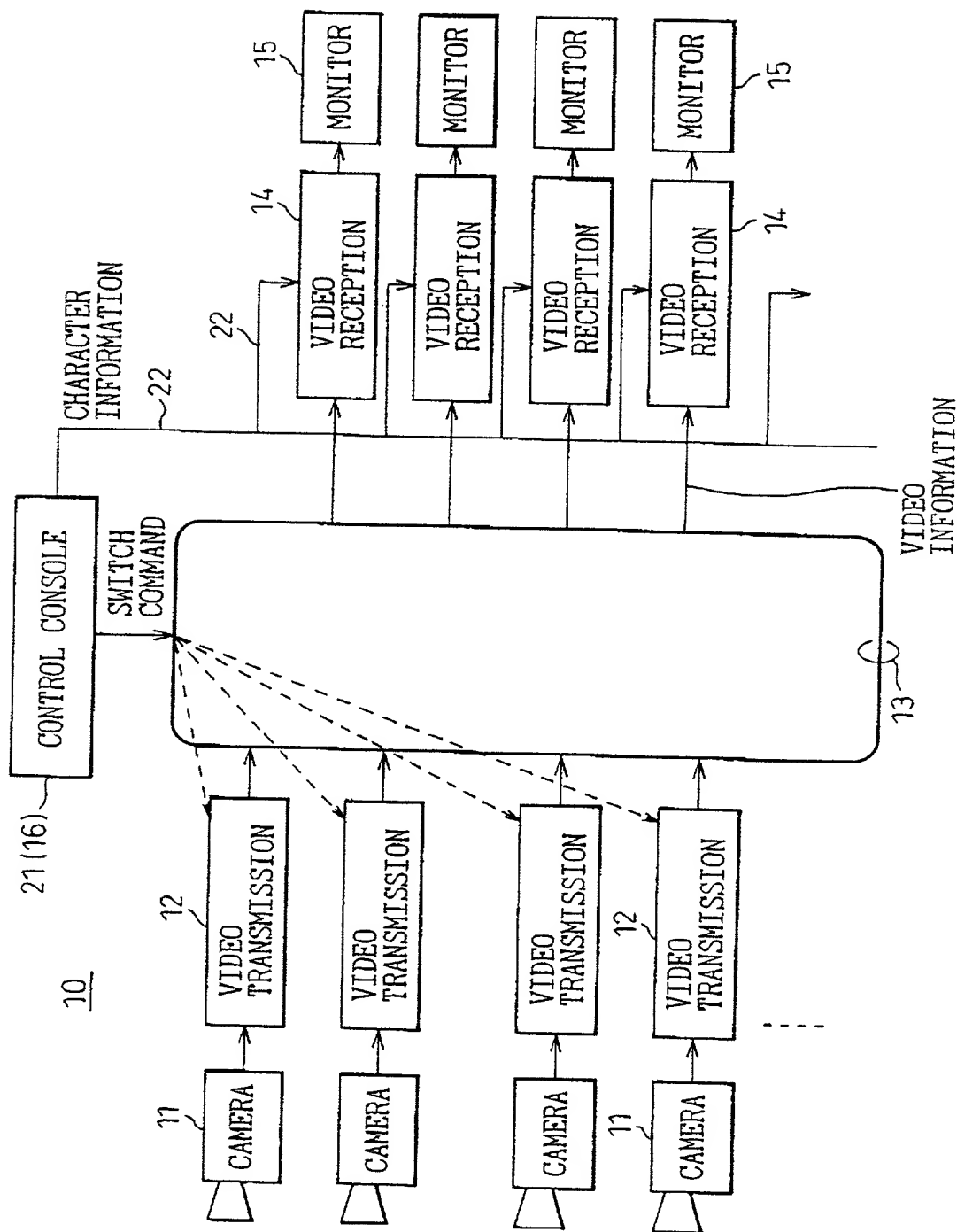


Fig. 3

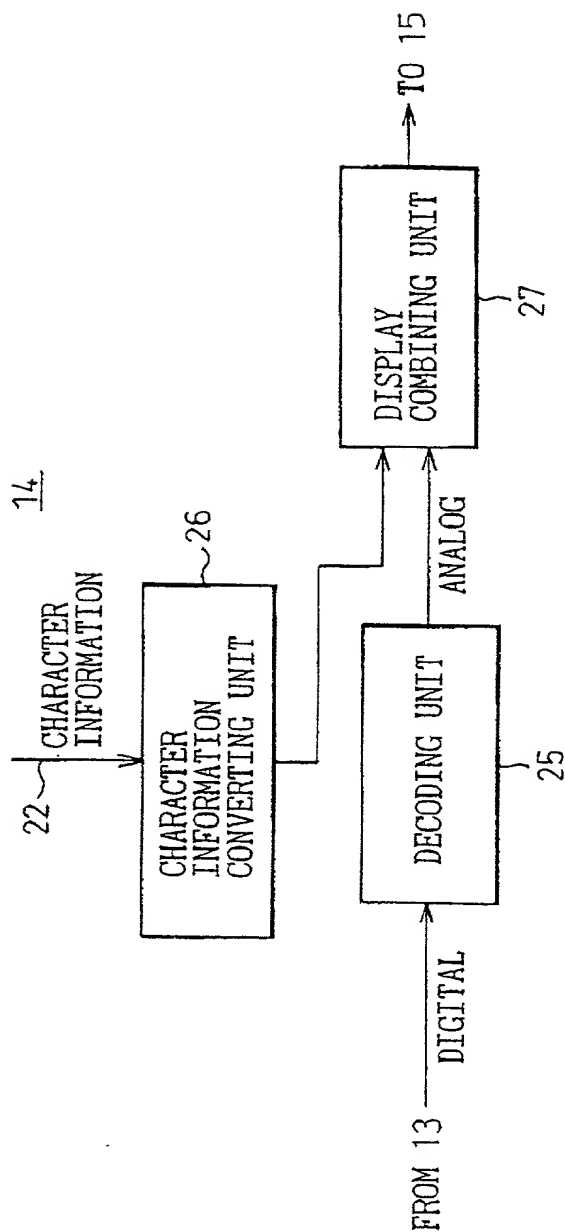


Fig.4

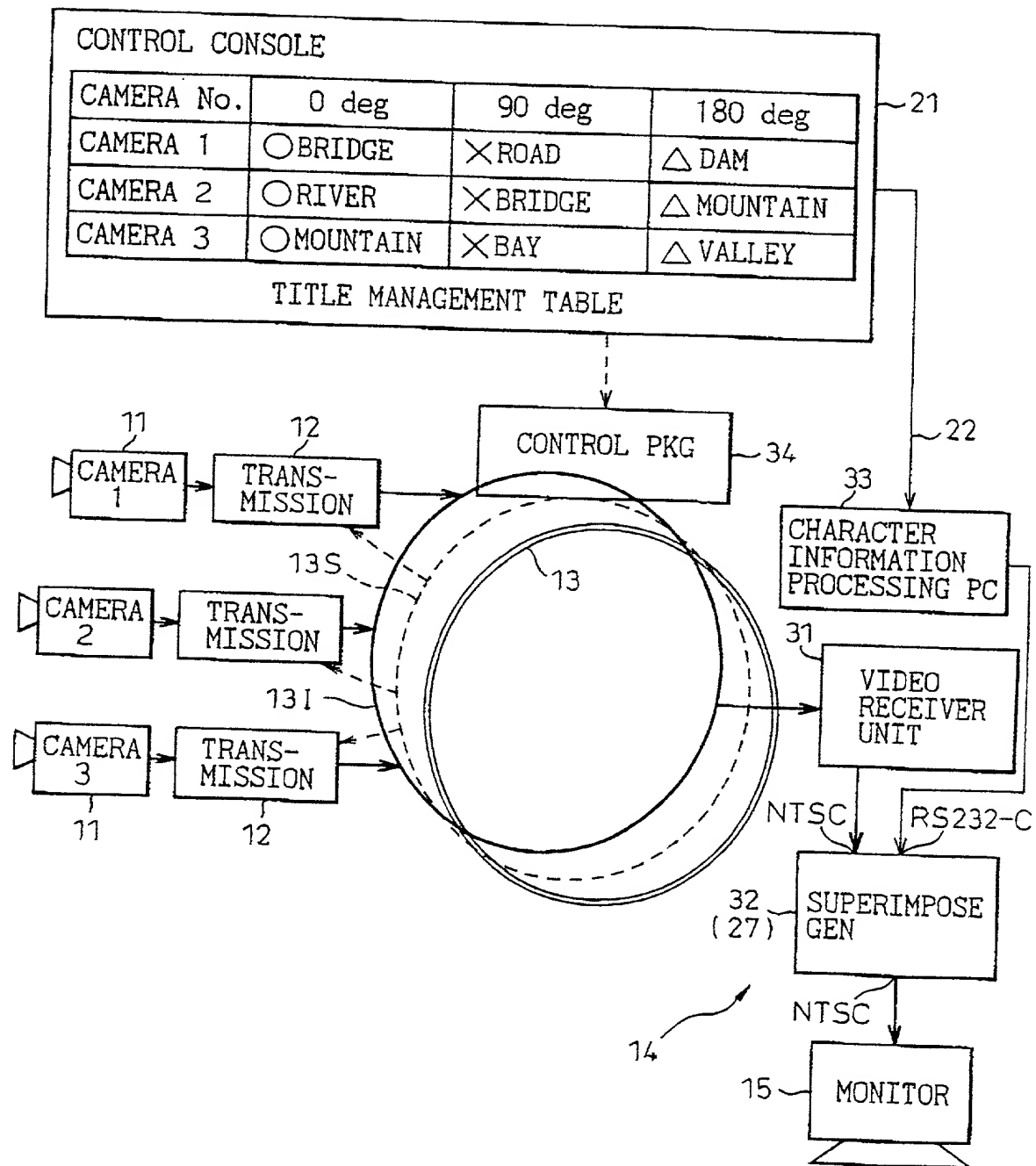


Fig.5

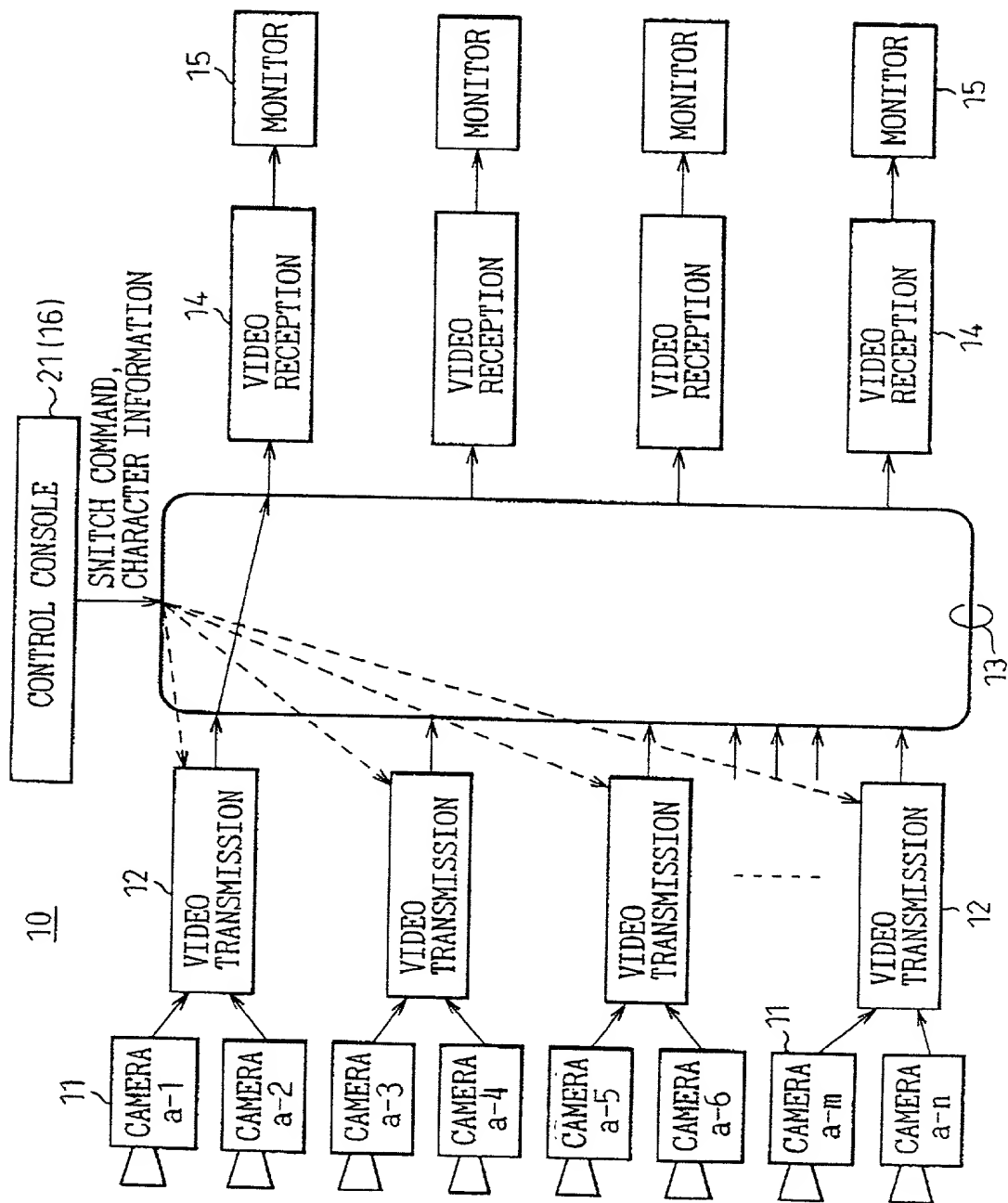


Fig.6

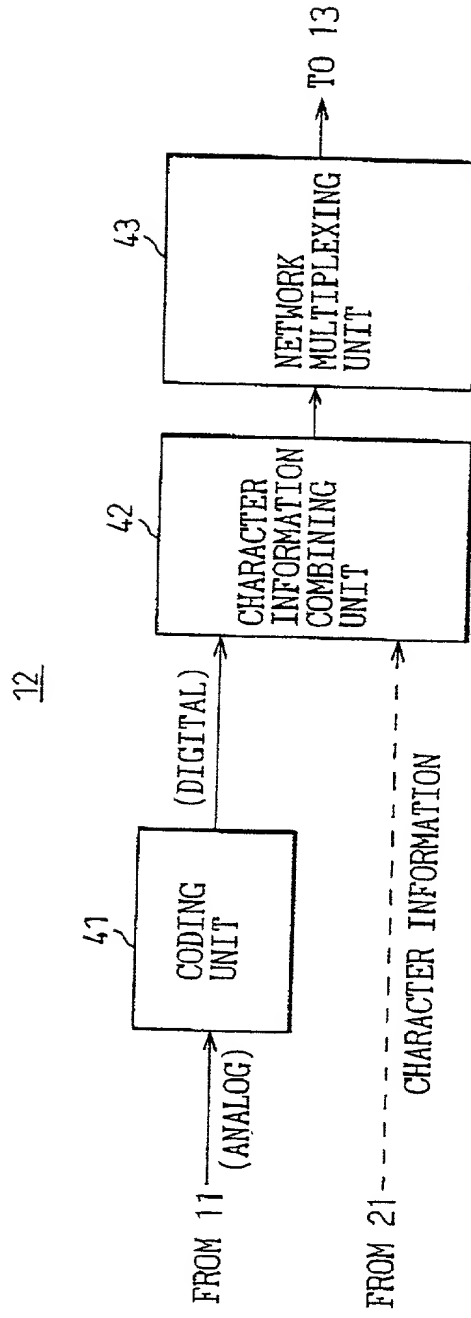


Fig. 7

14

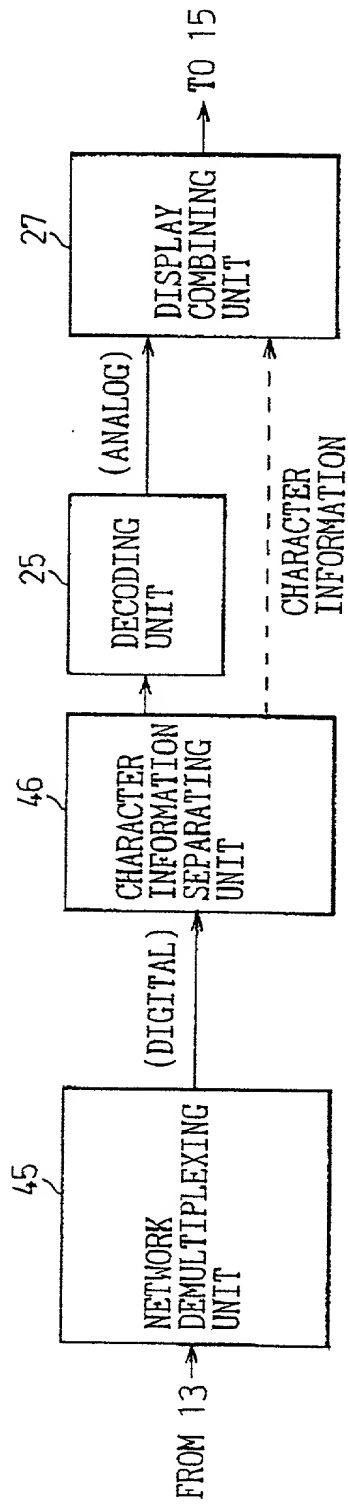


Fig.8

CONTROL CONSOLE			
CAMERA No.	0 deg	90 deg	180 deg
CAMERA 1	○ BRIDGE	× ROAD	△ DAM
CAMERA 2	○ RIVER	× BRIDGE	△ MOUNTAIN
CAMERA 3	○ MOUNTAIN	× BAY	△ VALLEY

TITLE MANAGEMENT TABLE

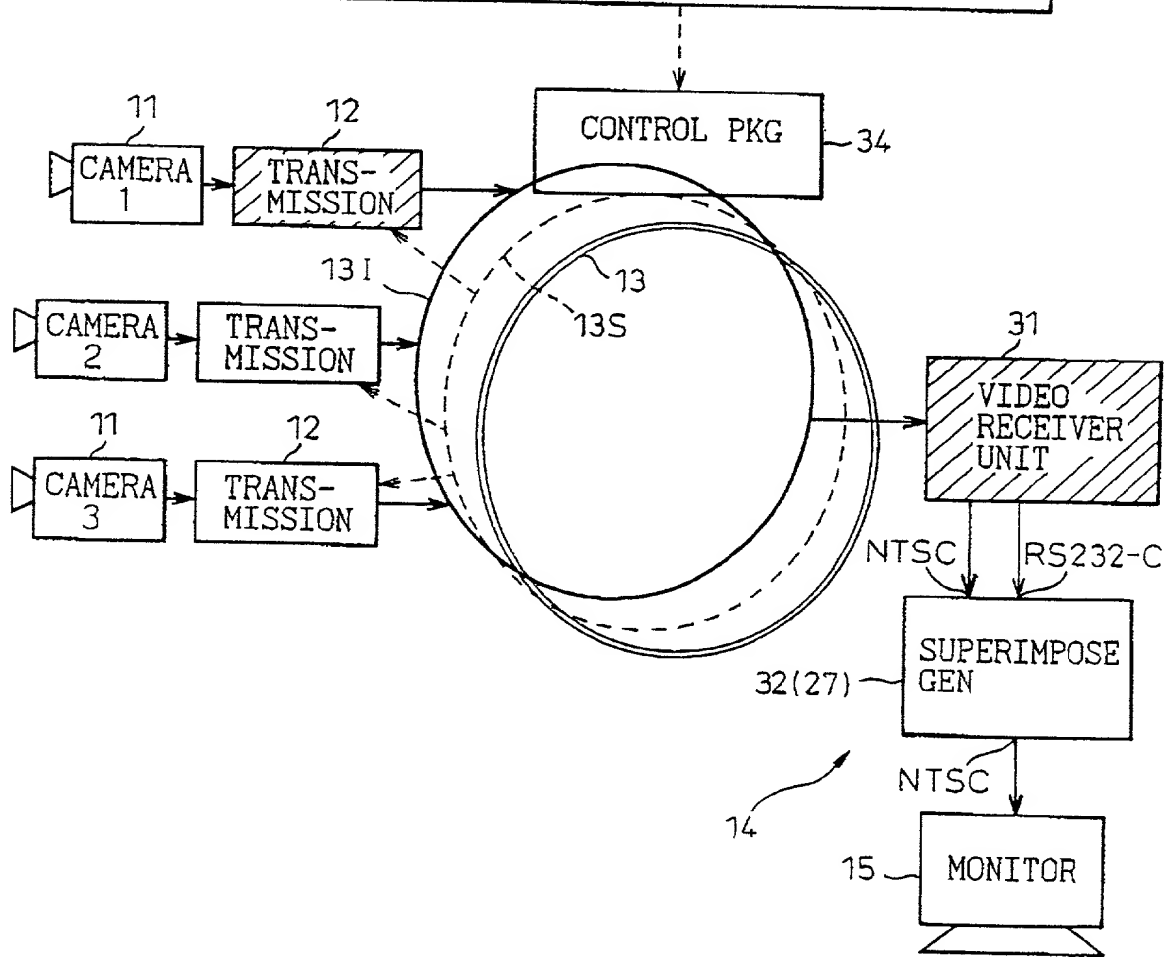


Fig.9

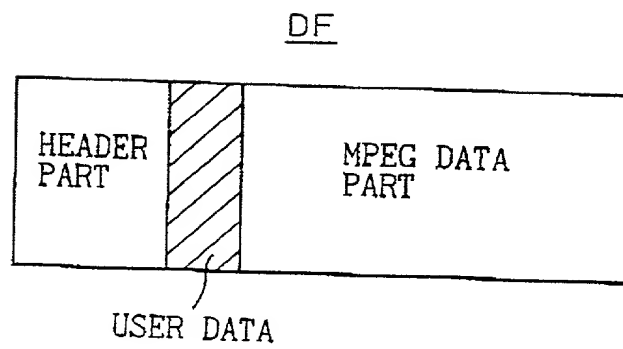


Fig.10

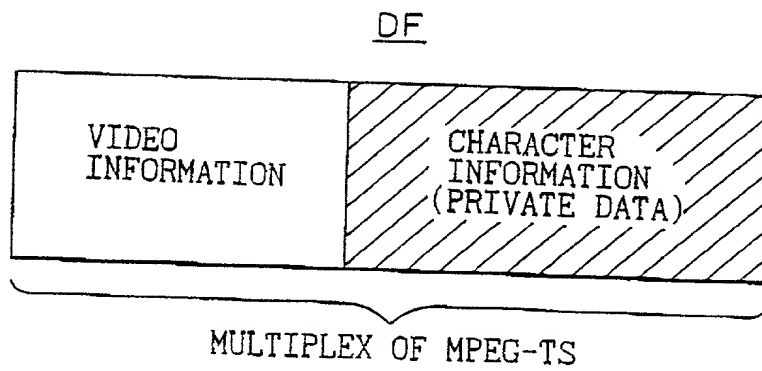


Fig.11

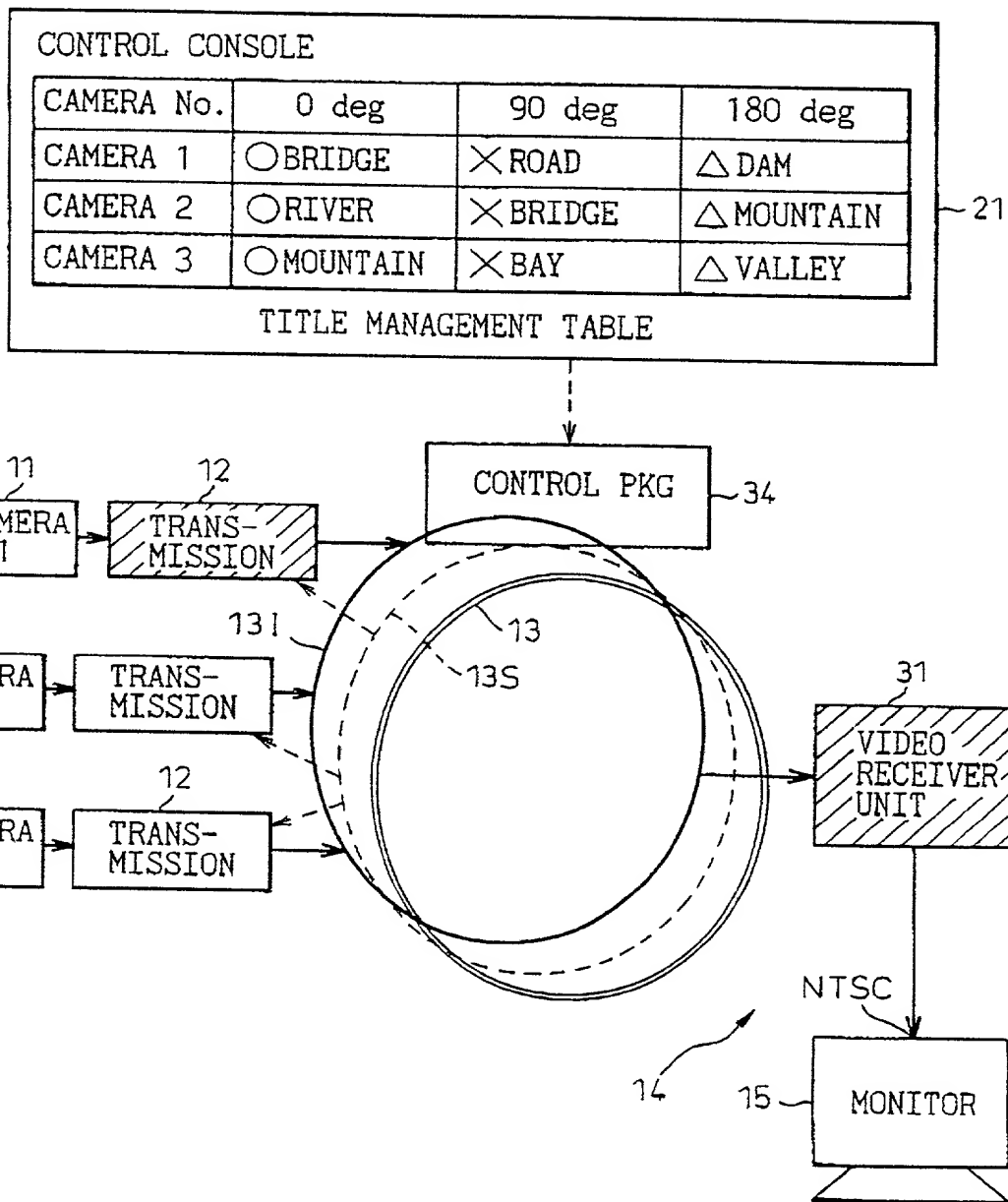


Fig.12

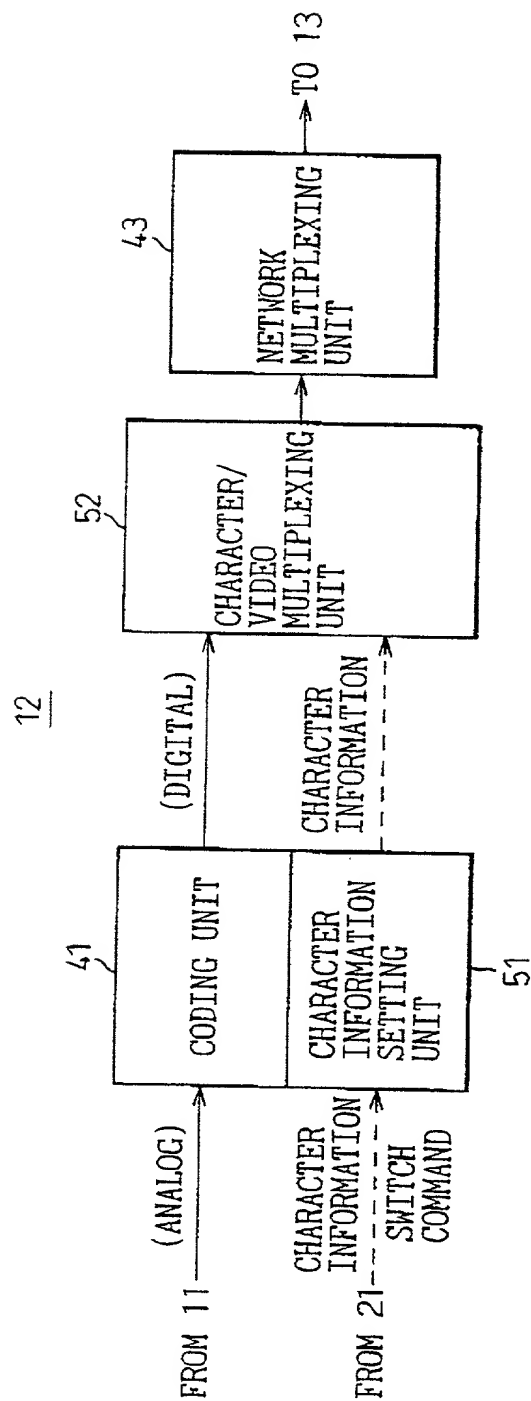


Fig.13

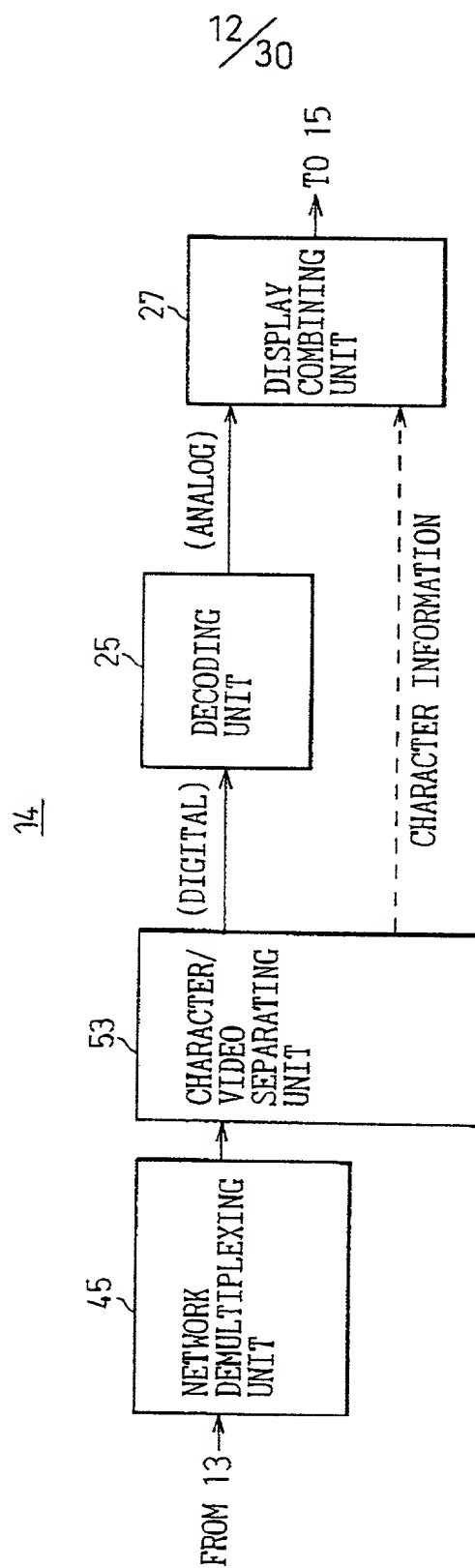


Fig.14

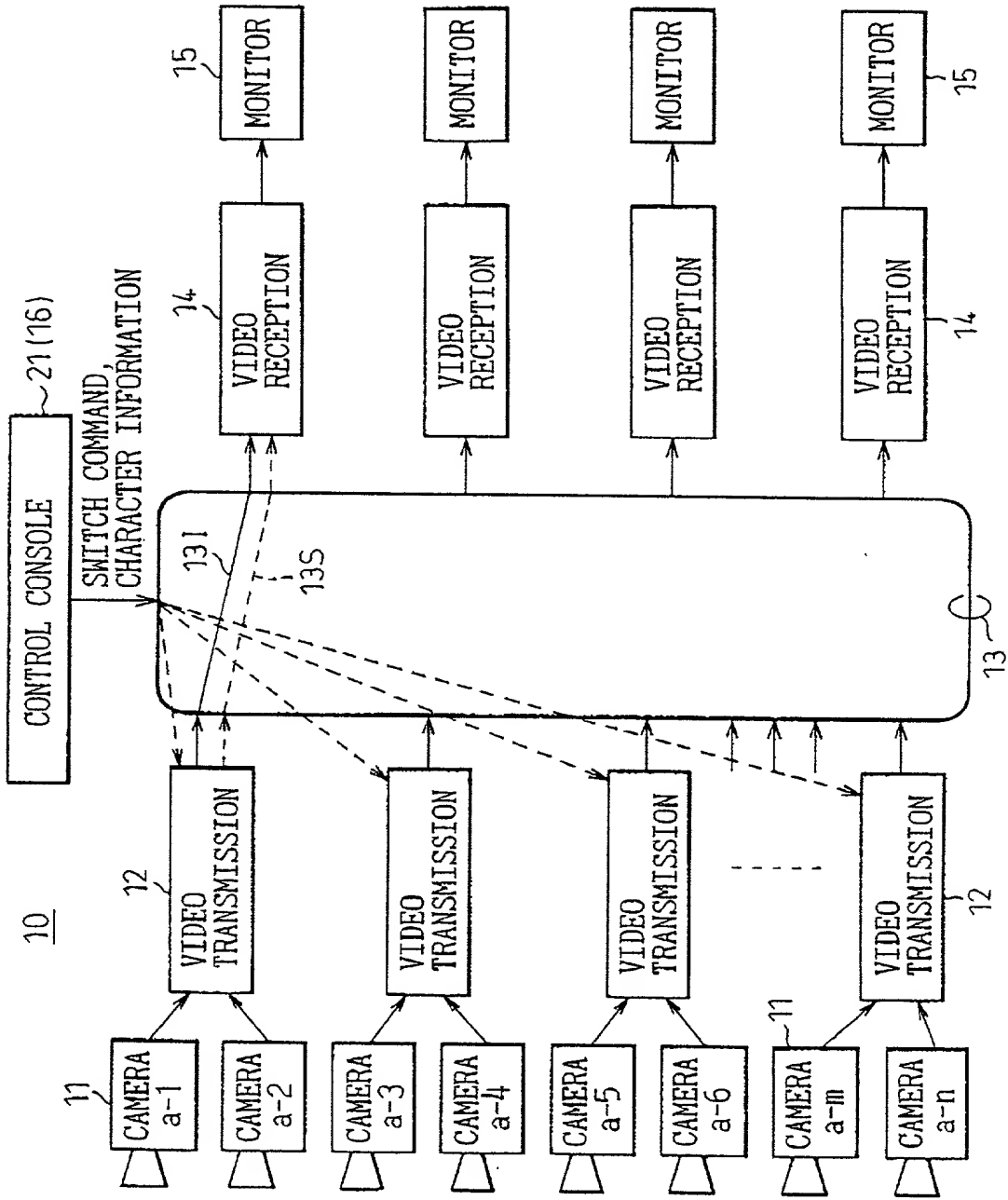


Fig.15

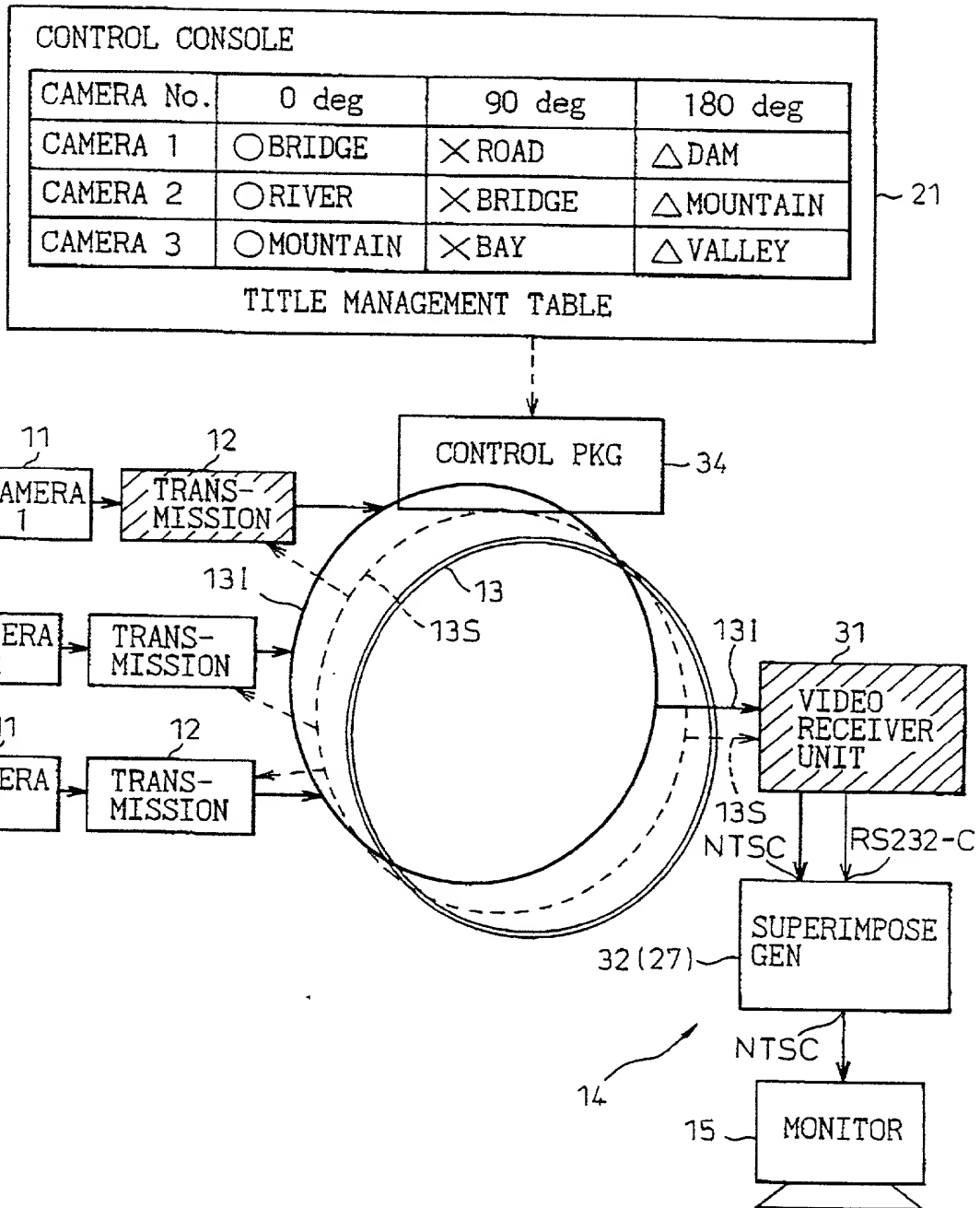


Fig.16

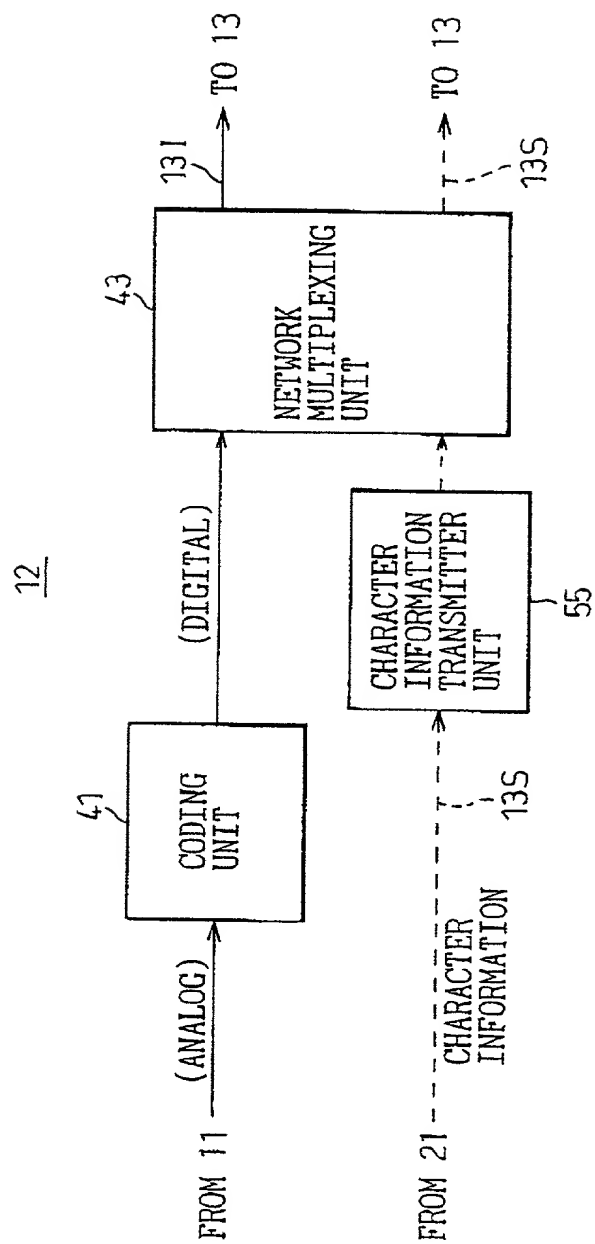


Fig.17

14

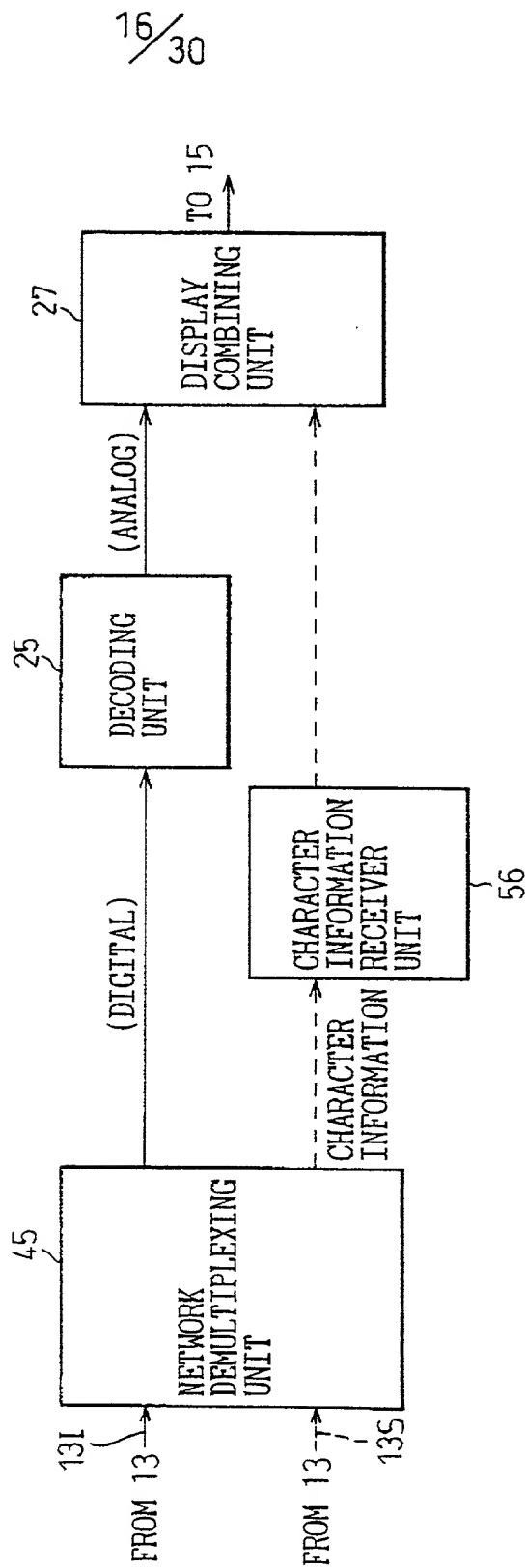


Fig.18

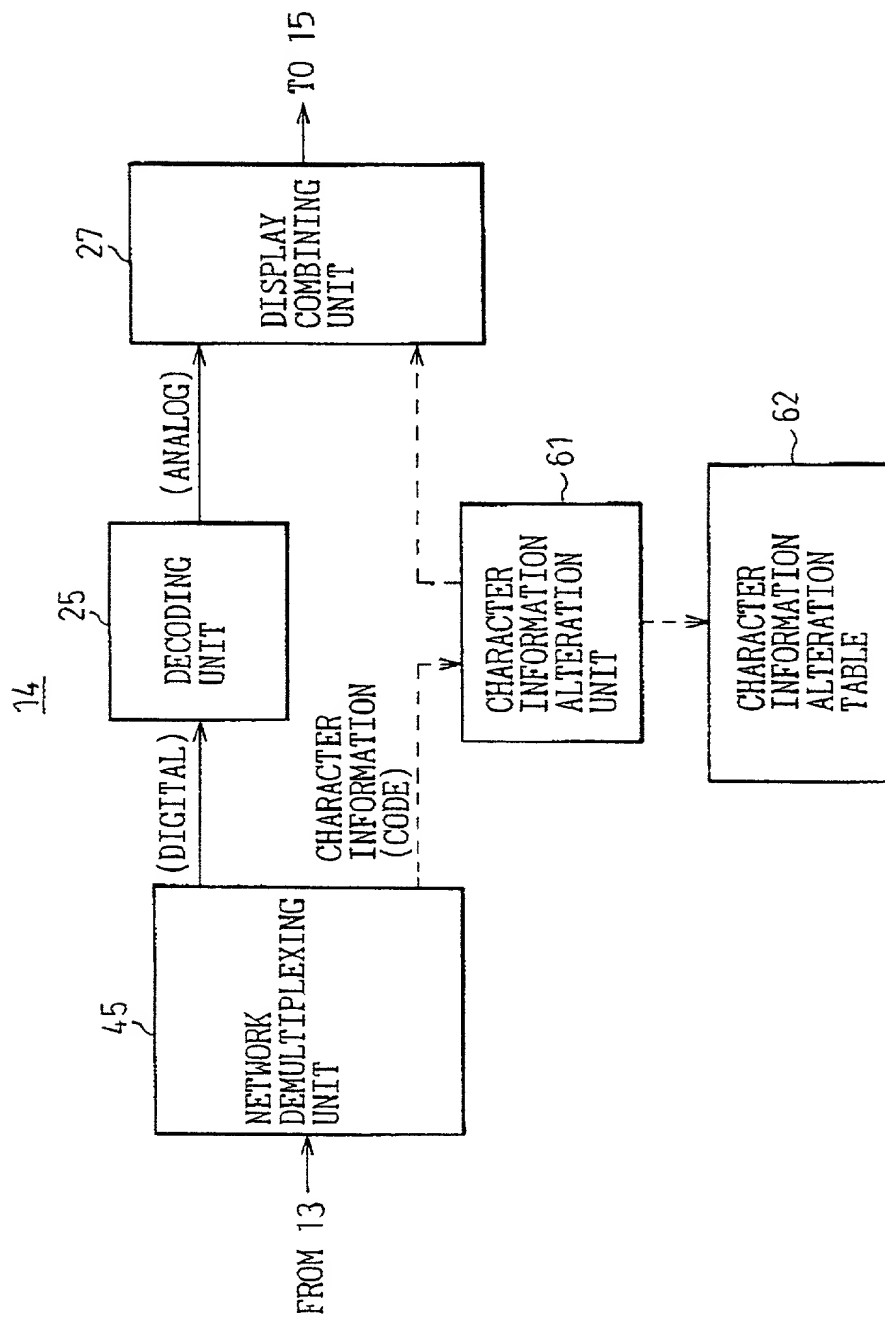


Fig. 20

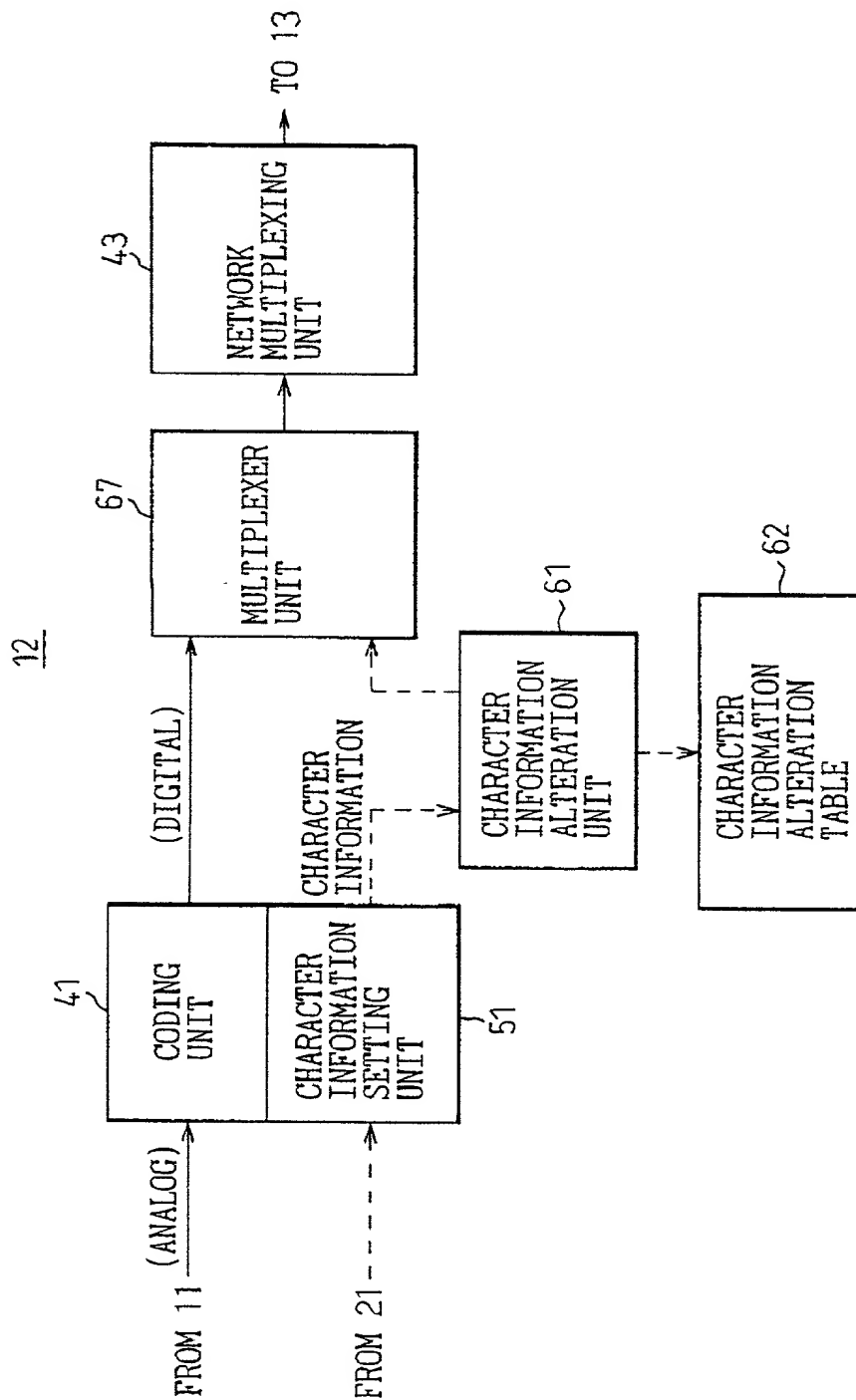


Fig. 21

12

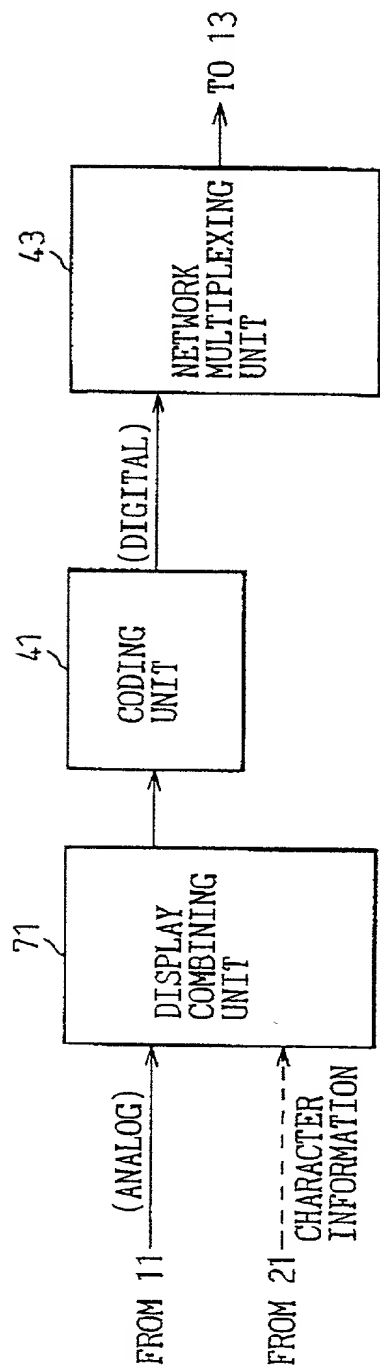


Fig.22

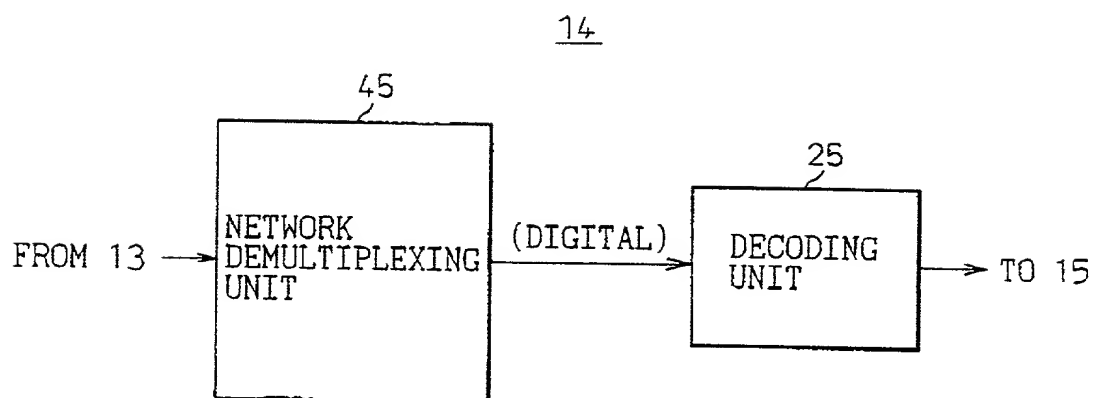


Fig.23

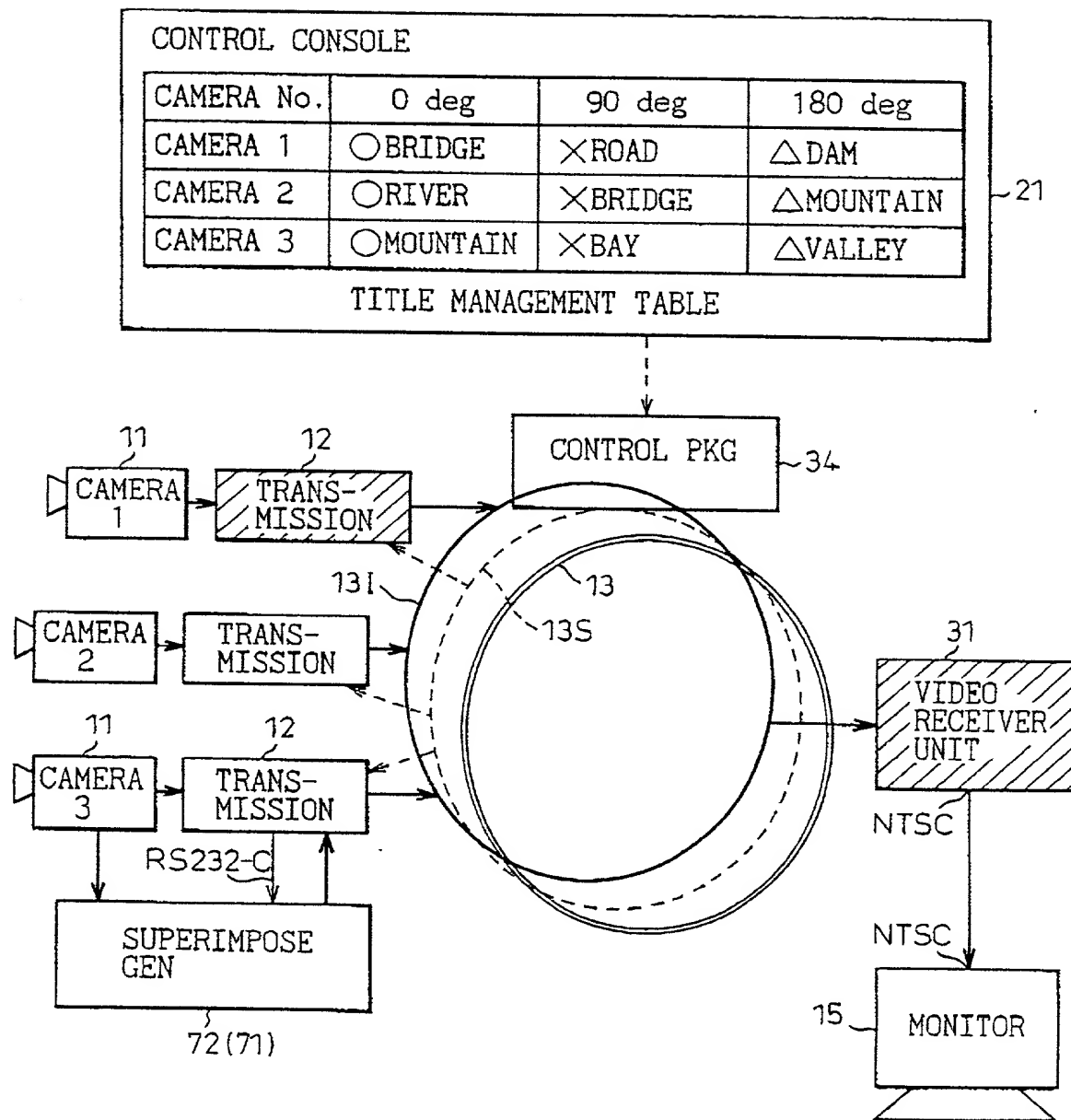


Fig. 24

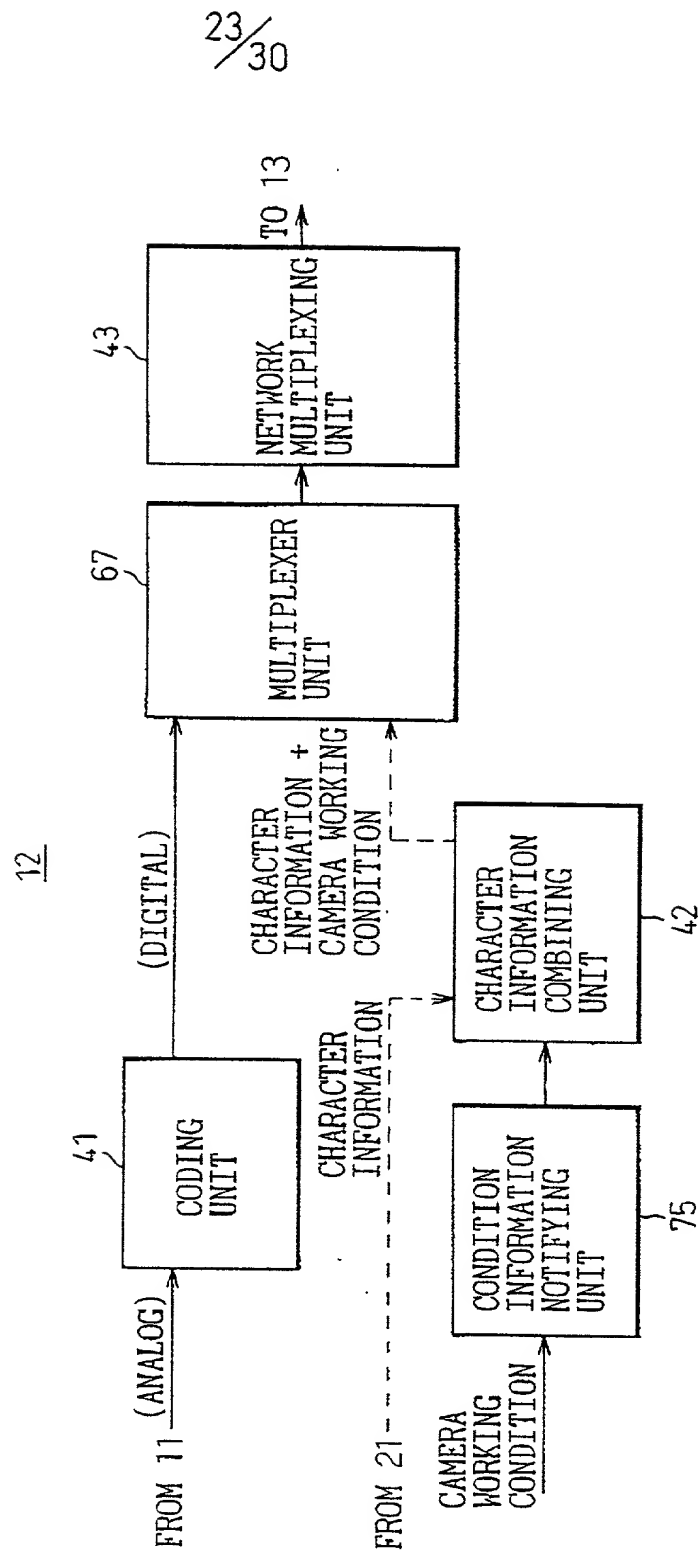


Fig.25

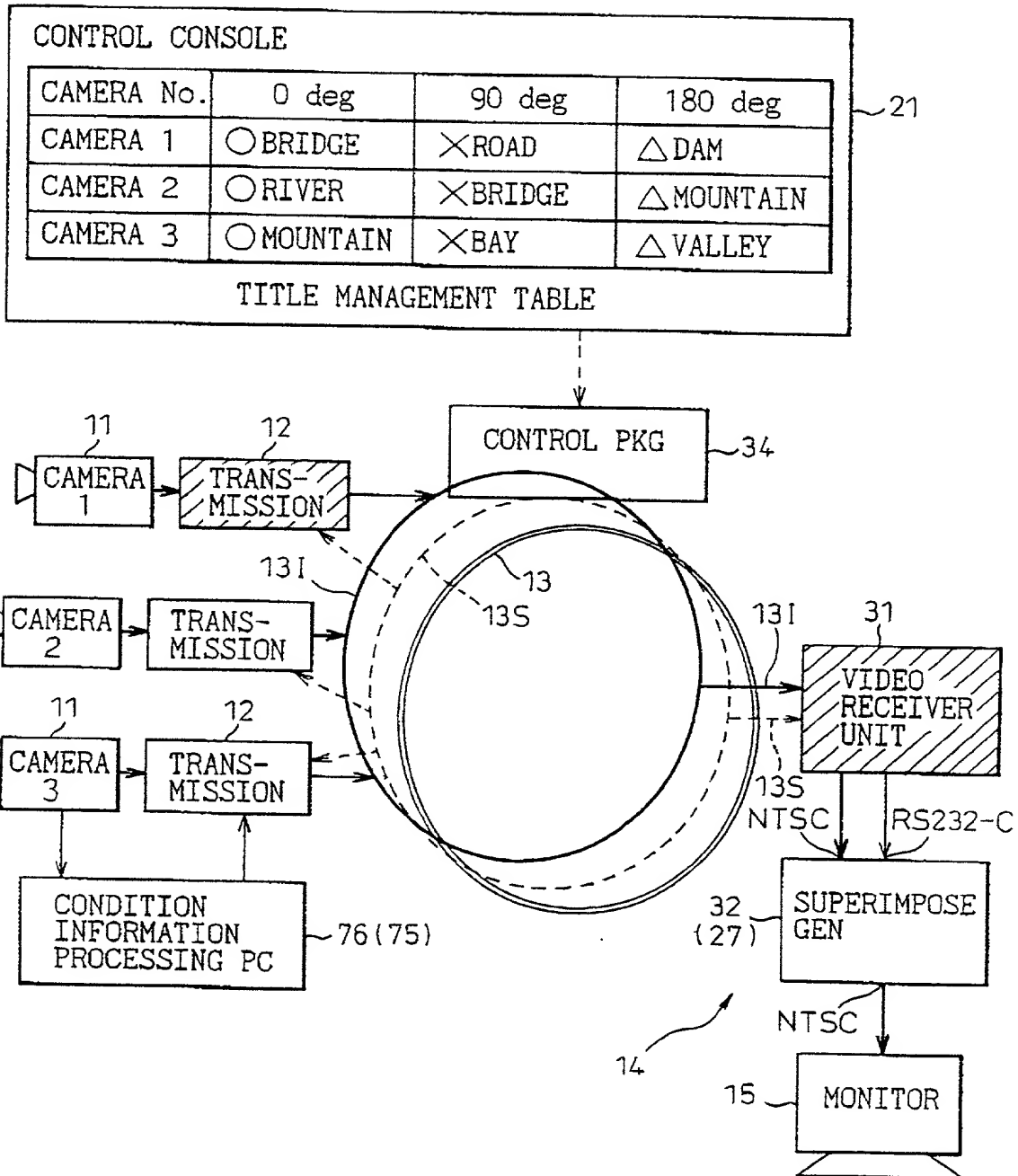


Fig.26

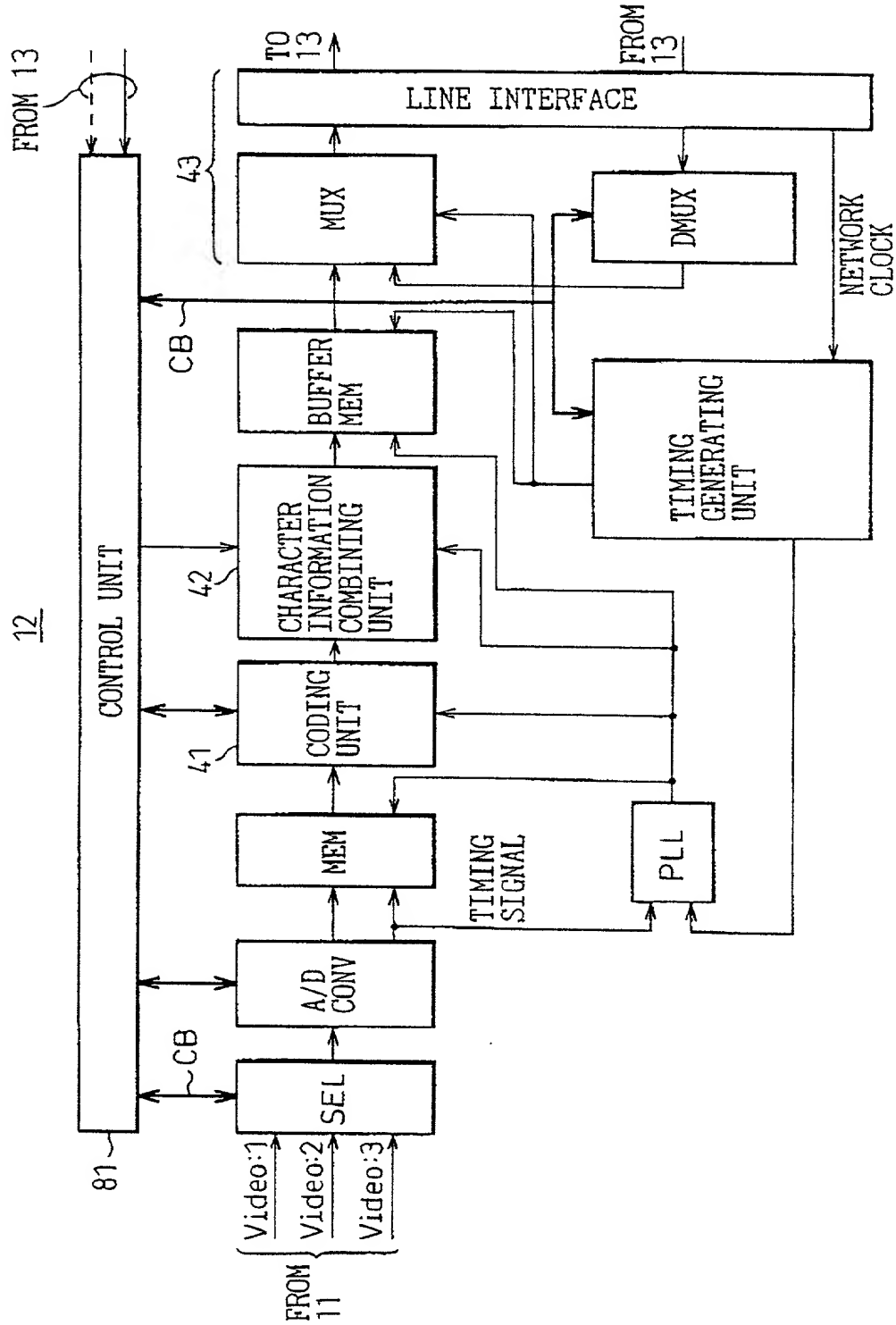


Fig. 27

14

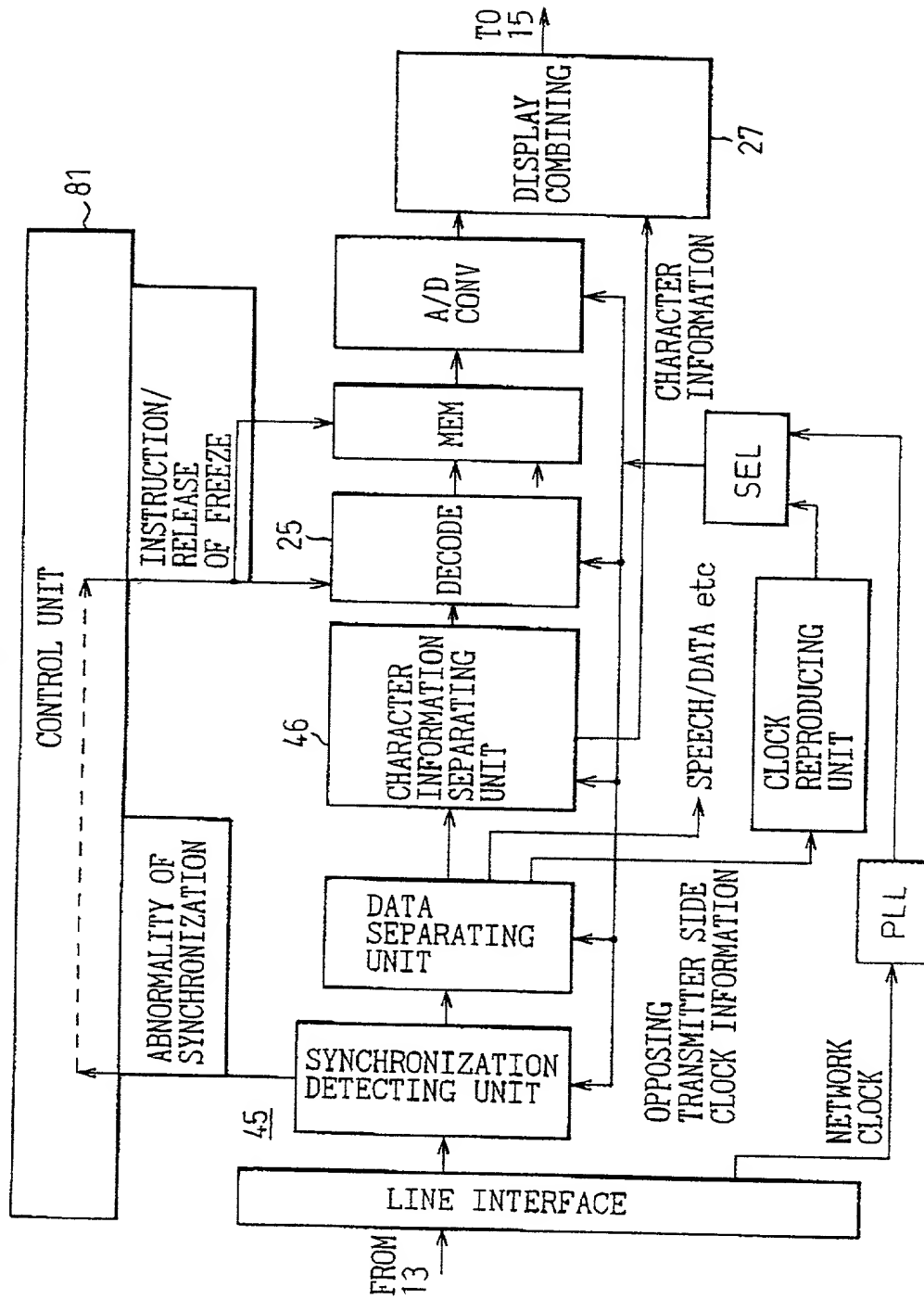


Fig.28

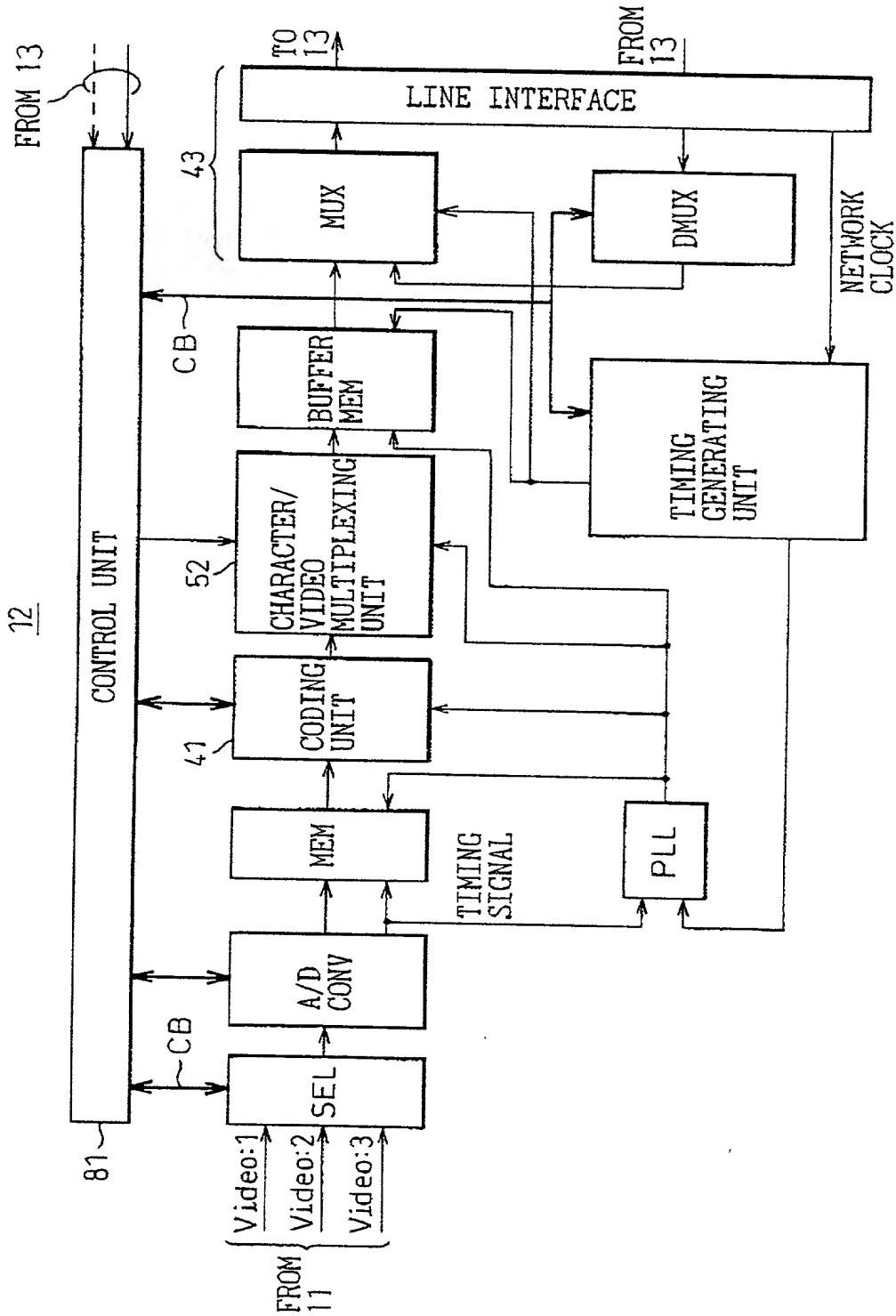


Fig. 29

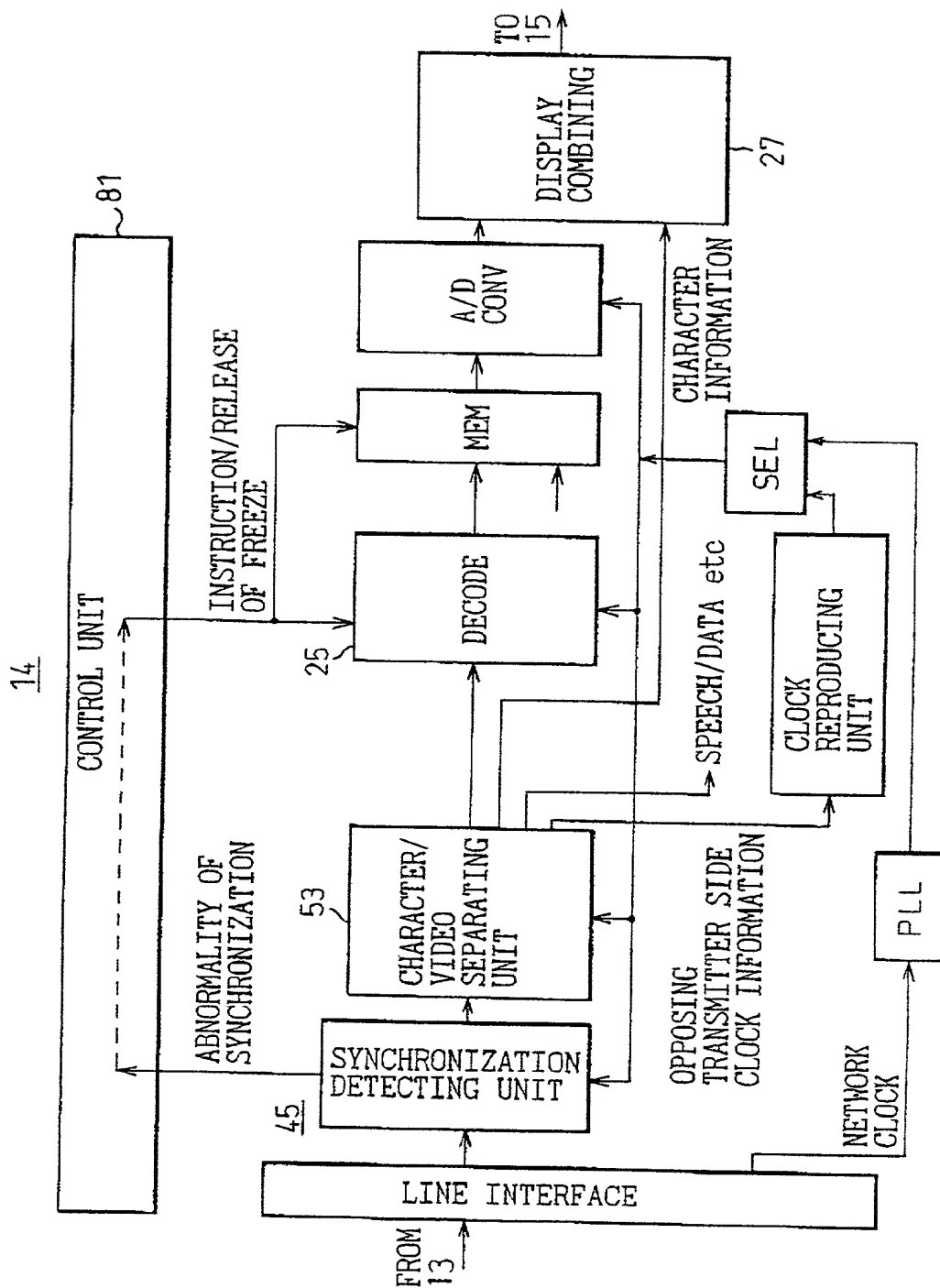
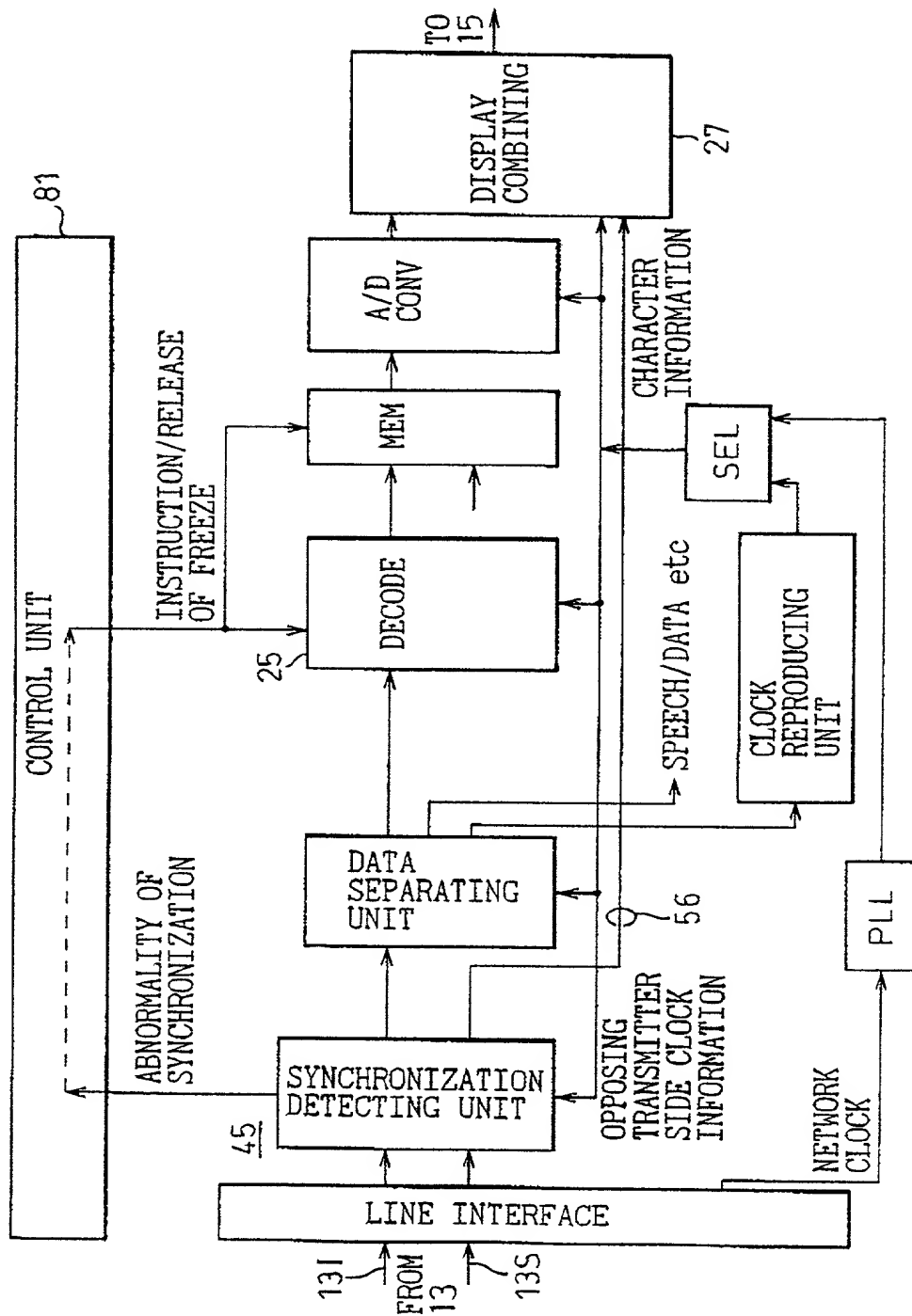


Fig.31

14



30/30

Declaration and Power of Attorney For Patent Application

特許出願宣言書及び委任状

Japanese Language Declaration

日本語宣言書

下記の氏名の発明者として、私は以下の通り宣言します。

As a below named inventor, I hereby declare that:

私の住所、私寓箱、国籍は下記の私の氏名の後に記載された通りです。

My residence, post office address and citizenship are as stated next to my name.

下記の名称の発明に関して請求範囲に記載され、特許出願している発明内容について、私が最初かつ唯一の発明者（下記の氏名が一つの場合）もしくは最初かつ共同発明者である（下記の名称が複数の場合）信じています。

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

VIDEO TELECOMMUNICATION SYSTEM

上記発明の明細書（下記の欄でx印がついていない場合は、本書に添付）は、

the specification of which is attached hereto unless the following box is checked:

☐ 月 日に提出され、米国出願番号または特許協定条約国際出願番号を _____ とし、
(該当する場合) _____ に訂正されました。

☐ was filed on _____
as United States Application Number or
PCT International Application Number
_____ and was amended on
_____ (if applicable).

私は、特許請求範囲を含む上記訂正後の明細書を検討し、内容を理解していることをここに表明します。

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

私は、連邦規則法典第37編第1条56項に定義されるとおり、特許資格の有無について重要な情報を開示する義務があることを認めます。

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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私は、米国法典第35編119条(a)-(d)項又は365条(b)項に基づき下記の、米国外の国の少なくとも一カ国を指定している特許協力条約365(a)項に基づく国際出願、又は外国での特許出願もしくは発明者証の出願についての外国優先権をここに主張するとともに、優先権を主張している、本出願の前に出願された特許または発明者証の外国出願を以下に、枠内をマークすることで、示しています。

Prior Foreign Application(s)

外国での先行出願

11-041910 (Pat. Appln.) Japan

(Number)
(番号)

(Country)
(国名)

(Number)
(番号)

(Country)
(国名)

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(Application No.)
(出願番号)

(Filing Date)
(出願日)

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(Application No.)
(出願番号)

(Filing Date)
(出願日)

(Application No.)
(出願番号)

(Filing Date)
(出願日)

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I hereby claim foreign priority under Title 35, United States Code, Section 119 (a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

19/February/1999

(Day/Month/Year Filed)
(出願年月日)

(Day/Month/Year Filed)
(出願年月日)

Priority Not Claimed

優先権主張なし

☐

☐

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below.

(Application No.)
(出願番号)

(Filing Date)
(出願日)

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of application.

(Status: Patented, Pending, Abandoned)
(現況: 特許許可済、係属中、放棄済)

(Status: Patented, Pending, Abandoned)
(現況: 特許許可済、係属中、放棄済)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Japanese Language Declaration (日本語宣言書)

委任状: 私は下記の発明者として、本出願に関する一切の手続きを米特許商標局に対して遂行する弁理士または代理人として、下記の者を指名いたします。(弁理士、または代理人の氏名及び登録番号を明記のこと)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith (list name and registration number)

書類送付先

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Direct Telephone Calls to: (name and telephone number)

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(212) 643-5000

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発明者の署名	日付	Inventor's signature Nobuyuki Kaneko	Date February 8, 2000
住所		Residence Kawasaki-shi, Kanagawa, Japan	
国籍		Citizenship Japanese	
私書箱		Post Office Address c/o FUJITSU LIMITED, 1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki-shi, Kanagawa 211-8588, Japan	
第二共同発明者		Full name of second joint inventor, if any Takehiko Fujiyama	
第二共同発明者	日付	Second inventor's signature Takehiko Fujiyama	Date February 8, 2000
住所		Residence Kawasaki-shi, Kanagawa, Japan	
国籍		Citizenship Japanese	
私書箱		Post Office Address c/o FUJITSU LIMITED, 1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki-shi, Kanagawa 211-8588, Japan	

(第三以降の共同発明者についても同様に記載し、署名をすること)

(Supply similar information and signature for third and subsequent joint inventors.)

Full name of third joint inventor, if any
Yûichi Ashida

第三共同発明者	日付	Third inventor's signature <i>Yûichi Ashida</i>	Date February 8, 2000
---------	----	--	--------------------------

住 所	Residence Kawasaki-shi, Kanagawa, Japan
-----	--

国 籍	Citizenship Japanese
-----	-------------------------

私 書 箱	Post Office Address c/o FUJITSU LIMITED, 1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki-shi, Kanagawa 211-8588, Japan
-------	--

第四共同発明者	Full name of fourth joint inventor, if any Toshinori Shima
---------	---

第四共同発明者	日付	Fourth inventor's signature <i>Toshinori Shima</i>	Date February 8, 2000
---------	----	---	--------------------------

住 所	Residence Fukuoka-shi, Fukuoka, Japan
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国 籍	Citizenship Japanese
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私 書 箱	Post Office Address c/o FUJITSU KYUSHU DIGITAL TECHNOLOGY LIMITED, 3-22-8, Hakataekimae Hakata-ku, Fukuoka-shi, Fukuoka, 812-0011, Japan
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第五共同発明者	Full name of fifth joint inventor, if any
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第五共同発明者	日付	Fifth inventor's signature	Date
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住 所	Residence
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国 籍	Citizenship
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私 書 箱	Post Office Address
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第六共同発明者	Full name of sixth joint inventor, if any
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第六共同発明者	日付	Sixth inventor's signature	Date
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住 所	Residence
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国 籍	Citizenship
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私 書 箱	Post Office Address
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(第七以降の共同発明者についても同様に記載し、署名をすること)

(Supply similar information and signature for seventh and subsequent joint inventors.)

THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: Nobuyuki KANEKO et al.

Filed: : Concurrently herewith

For : VIDEO TELECOMMUNICATION SYSTEM

Serial No.: Concurrently herewith

February 17, 2000

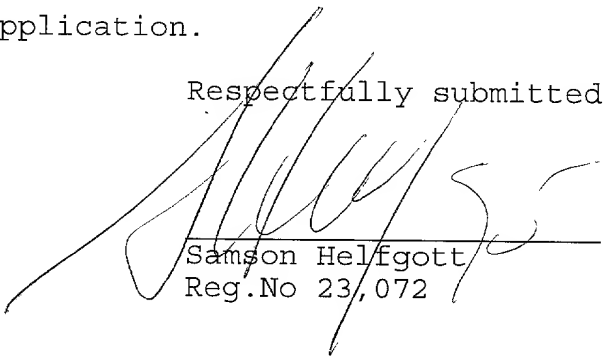
Assistant Commissioner of Patents
Washington, D.C. 20231

SUB-POWER OF ATTORNEY

S I R:

I, Samson Helfgott, Reg. No. 23,072 attorney of record herein, do hereby grant a sub-power of attorney to Linda S. Chan, Reg. No. 42,400, Jacqueline M. Steady, Reg. No., 44,354 and Harris A. Wolin, Reg. No. 39,432 to act and sign in my behalf in the above-referenced application.

Respectfully submitted,



Samson Helfgott
Reg.No 23,072

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DOCKET NO.: FUJA17.073
LHH:power

Filed Via Express Mail

Rec. No.: EL522353683US

On: February 17, 2000

By: Lydia Gonzalez

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